

=> d iall

L1 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:592008 HCAPLUS
 DOCUMENT NUMBER: 143:100401
 ENTRY DATE: Entered STN: 08 Jul 2005
 TITLE: Electrolytes for lithium sulfur batteries
 INVENTOR(S): Mikhaylik, Yuriy V.
 PATENT ASSIGNEE(S): Moltech Corp., USA
 SOURCE: U.S. Pat. Appl. Publ., 18 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English

INT. PATENT CLASSIF.:

MAIN: H01M004-58

SECONDARY: H01M010-40

US PATENT CLASSIF.: 429218100; 429231950; 429326000; 429329000;
 429339000; 429340000; 429341000; 429337000

CLASSIFICATION: 52-2 (Electrochemical, Radiational, and Thermal
 Energy Technology)

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005147886	A1	20050707	US 2004-753031	20040106
CA 2552418	A1	20050728	CA 2005-2552418	20050106
WO 2005069409	A2	20050728	WO 2005-US494	20050106
WO 2005069409	A3	20050915		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1702383	A2	20060920	EP 2005-705254	20050106
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
CN 1930725	A	20070314	CN 2005-80006955	20050106
PRIORITY APPLN. INFO.:				200401
US 2004-753031				A

06

WO 2005-US494

W

200501
06

PATENT CLASSIFICATION CODES:

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2005147886	ICM	H01M004-58
	ICS	H01M010-40
	INCL	429218100; 429231950; 429326000; 429329000; 429339000; 429340000; 429341000; 429337000
	IPCI	H01M0004-58 [ICM,7]; H01M0010-40 [ICS,7]; H01M0010-36 [ICS,7,C*]
	IPCR	H01M0010-36 [I,C*]; H01M0010-40 [I,A]
	NCL	429/218.100; 429/231.950; 429/326.000; 429/329.000; 429/337.000; 429/339.000; 429/340.000; 429/341.000
CA 2552418	ECLA	H01M004/58B; H01M010/40E1; H01M010/40E5
	IPCI	H01M0010-40 [I,A]; H01M0010-36 [I,C*]
	IPCR	H01M0010-36 [I,C*]; H01M0010-40 [I,A]
	ECLA	H01M004/58B; H01M010/40E1; H01M010/40E5
WO 2005069409	IPCI	H01M0004-00 [ICM,7]
	IPCR	H01M0010-36 [I,C*]; H01M0010-40 [I,A]
	ECLA	H01M004/58B; H01M010/40E1; H01M010/40E5
EP 1702383	IPCI	H01M0010-40 [ICM,7]; H01M0010-36 [ICM,7,C*]
	ECLA	H01M004/58B; H01M010/40E1; H01M010/40E5
CN 1930725	IPCI	H01M0010-40 [I,A]; H01M0010-36 [I,C*]

ABSTRACT:

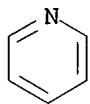
Disclosed is an electrochem. cell comprising a lithium anode and a sulfur-containing cathode and a nonaq. electrolyte. The cell exhibits high utilization of the electroactive sulfur-containing material of the cathode and a high charge-discharge efficiency.

SUPPL. TERM: electrolyte lithium sulfur battery
INDEX TERM: Ethers, uses
ROLE: DEV (Device component use); USES (Uses)
(cyclic; electrolytes for lithium sulfur batteries)
INDEX TERM: Battery electrolytes
(electrolytes for lithium sulfur batteries)
INDEX TERM: Ethers, uses
Polyethers, uses
Sulfones
ROLE: DEV (Device component use); USES (Uses)
(electrolytes for lithium sulfur batteries)
INDEX TERM: Nitrates, uses
ROLE: MOA (Modifier or additive use); USES (Uses)
(electrolytes for lithium sulfur batteries)
INDEX TERM: Nitrites
ROLE: MOA (Modifier or additive use); USES (Uses)
(electrolytes for lithium sulfur batteries)
INDEX TERM: Secondary batteries
(lithium; electrolytes for lithium sulfur
batteries)
INDEX TERM: Nitro compounds
ROLE: MOA (Modifier or additive use); USES (Uses)
(organic; electrolytes for lithium sulfur batteries)
INDEX TERM: 110-71-4 646-06-0, Dioxolane 7439-93-2, Lithium,

uses 7439-93-2D, Lithium, salts 7704-34-9, Sulfur,
uses
ROLE: DEV (Device component use); USES (Uses)
(electrolytes for lithium sulfur batteries)
INDEX TERM: 75-52-5, Nitromethane, uses 98-95-3, Nitrobenzene,
uses 108-03-2, 1-Nitropropane 506-93-4,
Guanidinium nitrate 556-65-0, Lithium thiocyanate
1321-12-6, Nitrotoluene 2564-83-2, Tempo
6484-52-2, Ammonium nitrate, uses 7757-79-1,
Potassium nitrate, uses 7758-09-0, Potassium nitrite
7789-18-6, Cesium nitrate 7790-69-4, Lithium nitrate
10022-31-8, Barium nitrate 13446-48-5, Ammonium
nitrite 13454-83-6, Cesium nitrite 13568-33-7,
Lithium nitrite 25154-54-5, DiNitrobenzene
25321-14-6, DiNitrotoluene 25322-01-4, Nitropropane
33454-82-9, Lithium triflate 56778-64-4,
Nitropyridine 90076-65-6 143314-14-1,
1-Ethyl-3-methylimidazolium nitrate
ROLE: MOA (Modifier or additive use); USES (Uses)
(electrolytes for lithium sulfur batteries)

=> d sca

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Pyridine, nitro- (9CI)
MF C5 H4 N2 O2
CI IDS, COM



D1-NO₂

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):26

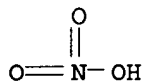
L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Nitrous acid, lithium salt (8CI, 9CI)
MF H N O2 . Li
CI COM

O=N-OH

● Li

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Nitric acid, cesium salt (1:1)

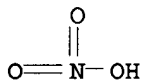
MF Cs . H N O3



● Cs

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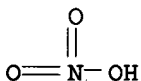
L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Nitric acid ammonium salt (1:1)
MF H3 N . H N O3
CI COM

● NH₃

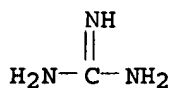
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Guanidine, mononitrate (8CI, 9CI)
MF C H5 N3 . H N O3
CI COM

CM 1



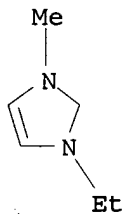
CM 2



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

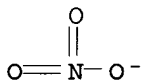
L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN 1H-Imidazolium, 3-ethyl-1-methyl-, nitrate (1:1)
MF C6 H11 N2 . N O3

CM 1



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Benzene, methyldinitro- (9CI)
MF C7 H6 N2 O4
CI IDS, COM

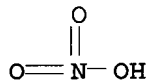


D1- Me

2 [D1-NO₂]

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Nitric acid, barium salt (2:1)
MF Ba . 2 H N O3
CI COM



●1/2 Ba

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Sulfur
ADDITIONAL NAMES NOT AVAILABLE IN THIS FORMAT
MF S
CI COM

S

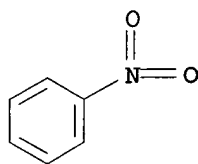
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L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN 1,3-Dioxolane
MF C3 H6 O2
CI COM, RPS



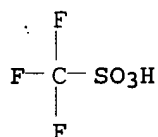
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Benzene, nitro-
MF C6 H5 N O2
CI COM



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

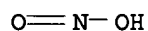
L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
 IN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI)
 MF C H F3 O3 S . Li
 CI COM



● Li

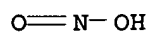
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
 IN Nitrous acid, cesium salt (8CI, 9CI)
 MF Cs . H N O2
 CI COM



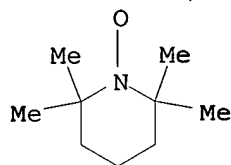
● Cs

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
 IN Nitrous acid, potassium salt (8CI, 9CI)
 MF H N O2 . K
 CI COM



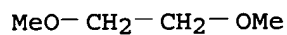
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN 1-Piperidinyloxy, 2,2,6,6-tetramethyl- (9CI)
MF C9 H18 N O
CI COM



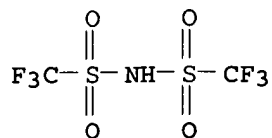
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Ethane, 1,2-dimethoxy-
MF C4 H10 O2
CI COM



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI)
MF C2 H F6 N O4 S2 . Li
CI COM



● Li

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

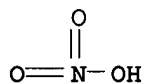
L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Benzene, dinitro-
MF C6 H4 N2 O4
CI IDS, COM



2 [D1-NO₂]

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Nitric acid, lithium salt (8CI, 9CI)
MF H N O3 . Li
CI COM



● Li

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Lithium
MF Li
CI COM

Li

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Thiocyanic acid, lithium salt (8CI, 9CI)
MF C H N S . Li
CI COM

HS-C \equiv N

● Li

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Methane, nitro-
MF C H3 N O2
CI COM

O
||
O=N-CH₃

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Propane, nitro-
MF C3 H7 N O2
CI IDS, COM

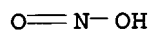
H₃C-CH₂-CH₃

D1-NO₂

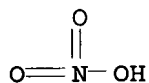
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN

IN Nitrous acid, ammonium salt (8CI, 9CI)
MF H3 N . H N O2



L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Nitric acid potassium salt (1:1)
MF H N O3 . K
CI COM



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Benzene, methylnitro-
MF C7 H7 N O2
CI IDS, COM



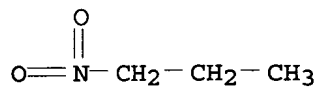
D1-Me

D1-NO₂

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L2 27 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Propane, 1-nitro-
MF C3 H7 N O2

CI COM



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

ALL ANSWERS HAVE BEEN SCANNED

=> fil reg

FILE 'REGISTRY' ENTERED AT 13:03:16 ON 19 MAR 2007
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2007 American Chemical Society (ACS)

=> d his nofile

(FILE 'HOME' ENTERED AT 10:15:42 ON 19 MAR 2007)

FILE 'HCAPLUS' ENTERED AT 10:15:51 ON 19 MAR 2007

L1 1 SEA US2005147886/PN

FILE 'REGISTRY' ENTERED AT 10:16:20 ON 19 MAR 2007

L2 27 SEA (7439-93-2/BI OR 10022-31-8/BI OR 108-03-2/BI OR
110-71-4/BI OR 1321-12-6/BI OR 13446-48-5/BI OR 13454-83-
6/BI OR 13568-33-7/BI OR 143314-14-1/BI OR 25154-54-5/BI
OR 25321-14-6/BI OR 25322-01-4/BI OR 2564-83-2/BI OR
33454-82-9/BI OR 506-93-4/BI OR 556-65-0/BI OR 56778-64-4
/BI OR 646-06-0/BI OR 6484-52-2/BI OR 75-52-5/BI OR
7704-34-9/BI OR 7757-79-1/BI OR 7758-09-0/BI OR 7789-18-6
/BI OR 7790-69-4/BI OR 90076-65-6/BI OR 98-95-3/BI)
D SCA

L3 1 SEA 7704-34-9/RN

L4 1 SEA 7439-93-2/RN

L5 12209 SEA LITHIUM SALT?/CNS

L6 5 SEA L2 AND L5

L7 1109 SEA L5 AND ?ACID LITHIUM SALT?/CNS

L8 4 SEA L2 AND L7

L9 1 SEA L6 NOT L8

L10 1 SEA "DIETHYL ETHER"/CN

L11 1 SEA "DIPROPYL ETHER"/CN

L12 1 SEA "DIBUTYL ETHER"/CN

L13 1 SEA DIMETHOXYMETHANE/CN

L14 1 SEA 149-73-5/RN

L15 1 SEA "1,2-DIMETHOXYETHANE"/CN

L16 1 SEA DIETHOXYETHANE/CN

L17 1 SEA "1,2-DIMETHOXYPROPANE"/CN

L18 1 SEA "1,3-DIMETHOXYPROPANE"/CN

L19 10 SEA (L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16
OR L17 OR L18)

L20 1 SEA TETRAHYDROFURAN/CN

L21 1 SEA TETRAHYDROPYRAN/CN

L22 1 SEA 2-METHYLTETRAHYDROFURAN/CN

L23 1 SEA "1,4-DIOXANE"/CN

L24 1 SEA "1,3-DIOXOLANE"/CN

L25 1 SEA TRIOXANE/CN

L26 6 SEA (L20 OR L21 OR L22 OR L23 OR L24 OR L25)

L27 1 SEA "DIETHYLENE GLYCOL DIMETHYL ETHER"/CN

L28 1 SEA "TRIETHYLENE GLYCOL DIMETHYL ETHER"/CN

L29 1 SEA "TETRAETHYLENE GLYCOL DIMETHYL ETHER"/CN

L30 1 SEA PENTAGLYME/CN

L31 1 SEA HEXAGLYME/CN

L32 1 SEA HEPTAGLYME/CN

L33 1 SEA "ETHYLENE GLYCOL DIVINYL ETHER"/CN

L34 1 SEA 764-99-8/RN

L35 1 SEA "TRIETHYLENE GLYCOL DIVINYL ETHER"/CN

L36 1 SEA "DIPROPYLENE GLYCOL DIMETHYL ETHER"/CN

L37 1 SEA 3891-33-6/RN

L38 11 SEA (L27 OR L28 OR L29 OR L30 OR L31 OR L32 OR L33 OR
L34 OR L35 OR L36 OR L37)
L39 1 SEA SULFOLANE/CN
L40 1 SEA 3-METHYLSULFOLANE/CN
L41 1 SEA 3-SULFOLENE/CN
L42 3 SEA (L39 OR L40 OR L41)
L43 1 SEA "LITHIUM NITRATE"/CN
L44 1 SEA "POTASSIUM NITRATE"/CN
L45 1 SEA "CESIUM NITRATE"/CN
L46 1 SEA "BARIUM NITRATE"/CN
L47 1 SEA "AMMONIUM NITRATE"/CN
L48 1 SEA "LITHIUM NITRITE"/CN
L49 1 SEA "POTASSIUM NITRITE"/CN
L50 1 SEA "CESIUM NITRITE"/CN
L51 1 SEA "AMMONIUM NITRITE"/CN
L52 1 SEA "GUANIDINE NITRATE"/CN
L53 1 SEA "1-ETHYL-3-METHYLIMIDAZOLIUM NITRATE"/CN
L54 1 SEA "1-METHYLIMIDAZOLIUM NITRATE"/CN
L55 1 SEA "1H-IMIDAZOLE, 1-ETHYL-, MONONITRATE"/CN
L56 1 SEA "ETHYL NITRITE"/CN
L57 1 SEA "PROPYL NITRITE"/CN
L58 1 SEA "BUTYL NITRITE"/CN
L59 2 SEA "PENTYL NITRITE"/CN
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L61 1 SEA NITROMETHANE/CN
L62 1 SEA NITROPROPANE/CN
L63 1 SEA NITROBENZENE/CN
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L67 1 SEA NITROPYRIDINE/CN
L68 1 SEA "3,5-DINITROPYRIDINE"/CN
L69 1 SEA "2,3-DINITROPYRIDINE"/CN
L70 1 SEA "2,4-DINITROPYRIDINE"/CN
L71 1 SEA "2,5-DINITROPYRIDINE"/CN
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L73 1 SEA "PYRIDINE N-OXIDE"/CN
L74 1 SEA "4-METHYLPYRIDINE N-OXIDE"/CN
L75 1 SEA "2-METHYLPYRIDINE N-OXIDE"/CN
L76 1 SEA "3-METHYLPYRIDINE N-OXIDE"/CN
L77 1 SEA "2-ETHYLPYRIDINE N-OXIDE"/CN
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L79 1 SEA "4-ETHYLPYRIDINE N-OXIDE"/CN
L80 1 SEA "PYRIDINE, 2-PROPYL-, 1-OXIDE"/CN
L81 1 SEA "PYRIDINE, 3-PROPYL-, 1-OXIDE"/CN
L82 1 SEA "PYRIDINE, 4-PROPYL-, 1-OXIDE"/CN
L83 1 SEA "PYRIDINE, 2-BUTYL-, 1-OXIDE"/CN
L84 1 SEA "PYRIDINE, 3-BUTYL-, 1-OXIDE"/CN
L85 1 SEA "PYRIDINE, 4-BUTYL-, 1-OXIDE"/CN
L86 1 SEA TEMPO/CN
L87 45 SEA (L43 OR L44 OR L45 OR L46 OR L47 OR L48 OR L49 OR
L50 OR L51 OR L52 OR L53 OR L54 OR L55 OR L56 OR L57 OR
L58 OR L59 OR L60 OR L61 OR L62 OR L63 OR L64 OR L65 OR
L66 OR L67 OR L68 OR L69 OR L70 OR L71 OR L72 OR L73 OR
L74 OR L75 OR L76 OR L77 OR L78 OR L79 OR L80 OR L81 OR
L82 OR L83 OR L84 OR L85 OR L86)
L88 19 SEA L2 AND L87

FILE 'HCAPLUS' ENTERED AT 12:07:00 ON 19 MAR 2007

L89 488816 SEA ELECTROLY?

L90 47972 SEA (L3 OR SULFUR? OR SULPHUR? OR S) (L)L89
L91 2383 SEA (SULFUR? OR SULPHUR? OR S) (2A) ((POSITIVE? OR
POS#) (A)ELECTROD## OR CATHOD##)
L92 35965 SEA (L4 OR L5 OR L7 OR LI OR LITHIUM?) (L)L89
L93 13864 SEA (LITHIUM? OR LI) (2A) ((NEGATIVE? OR NEG#) (A)ELECTROD##
OR ANOD##)
L94 10452 SEA (NONAQ# OR NONAQUEOUS? OR NONWATER? OR NONH2O OR
NON(A) (AQ# OR AQUEOUS? OR WATER? OR H2O)) (3A)L89
L95 4794 SEA (L90 OR L91) AND (L92 OR L93)
L96 520 SEA L95 AND L94
L97 53 SEA L96 AND L91
L98 28 SEA L97 AND L93
L99 103443 SEA (ACYCLIC? OR CYCLIC?) (2A)ETHER# OR POLYETHER#
L100 76271 SEA L19 OR L26 OR L38
L101 48927 SEA L42 OR SULFONE#
L102 9 SEA L98 AND (L99 OR L100)
L103 2 SEA L98 AND L101
L104 2 SEA L102 AND L103
L105 26726 SEA (N(A)O OR NITR!TE# OR N(A)OXIDE# OR NITRO) (2A) (COMPOU
ND# OR COMPD# OR ADDITIVE? OR ADJUVANT? OR AUXILIAR?)
L106 1575 SEA L87(L)L89
L107 1 SEA L104 AND (L105 OR L106)
L108 43673 SEA (L43 OR L44 OR L45 OR L46 OR L47 OR L48 OR L49 OR
L50 OR L51)
L109 424 SEA L100 AND L108
L110 142 SEA L109 AND L89
L111 3211 SEA (L19 OR L26 OR L38) (L)L89
L112 1192 SEA ((L43 OR L44 OR L45 OR L46 OR L47 OR L48 OR L49 OR
L50 OR L51)) (L)L89
L113 55 SEA L111 AND L112
L114 54 SEA L113 NOT (L98 OR L107)
L115 29 SEA L114 AND L94
L116 25 SEA L114 NOT L115
L117 27 SEA L98 NOT L107

FILE 'REGISTRY' ENTERED AT 12:56:46 ON 19 MAR 2007

L118 9 SEA (L43 OR L44 OR L45 OR L46 OR L47 OR L48 OR L49 OR
L50 OR L51)
L119 36 SEA L87 NOT L118
SAV L19 W31CHANETHER/A
SAV L26 W31RINGETHER/A
SAV L38 W31POLYETHER/A
SAV L42 W31SULFONE/A
SAV L118 W31INORGNO/A
SAV L119 W31ORGNO/A

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 13:03:21 ON 19 MAR 2007

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=> d l117 ibib abs hitstr hitind 1-27

L117 ANSWER 1 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1005573 HCAPLUS

DOCUMENT NUMBER: 143:269709

TITLE: **Nonaqueous electrolyte battery**
INVENTOR(S): Miyake, Masahide; Koga, Hideyuki; Itaya, Shoji; Fujimoto, Masahisa
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005251469	A	20050915	JP 2004-57709	20040302
PRIORITY APPLN. INFO.:				20040302

AB The battery has a Li intercalating anode and a S cathode containing ZnO and Al₂O₃ additives or ZnO and Sb₂O₅ additives.
IC ICM H01M004-02
ICS H01M004-38; H01M004-58; H01M004-62; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary lithium battery sulfur cathode zinc oxide additive; lithium secondary battery sulfur cathode alumina additive; sulfur cathode antimony oxide additive secondary lithium battery
IT Battery cathodes
(sulfur anodes containing zinc oxide-alumina or zinc oxide-antimony oxide additives for secondary lithium batteries)

L117 ANSWER 2 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1003783 HCAPLUS
DOCUMENT NUMBER: 143:269683
TITLE: Secondary **nonaqueous electrolyte battery**
INVENTOR(S): Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori; Miyake, Masahide; Fujimoto, Masahisa
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005251516	A	20050915	JP 2004-58933	20040303
PRIORITY APPLN. INFO.:				20040303

AB The battery has a **cathode** containing **S** as active mass and a **SBR** binder, an **anode** containing a **Li**-intercalating material; and a metal halide added **nonaq. electrolyte**.

IT 7439-93-2, Lithium, uses 7704-34-9, Sulfur, uses 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (electrolytes containing metal halide additives and cathodes containing SBR binders for secondary batteries)

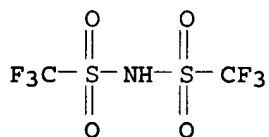
RN 7439-93-2 HCAPLUS
 CN Lithium (CA INDEX NAME)

Li

RN 7704-34-9 HCAPLUS
 CN Sulfur (CA INDEX NAME)

S

RN 90076-65-6 HCAPLUS
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40
 ICS H01M004-02; H01M004-38; H01M004-58; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery **sulfur cathode** SBR binder; battery **electrolyte** additive metal halide

IT 110-71-4 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses 7704-34-9, Sulfur, uses 9002-84-0, PTFE 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (electrolytes containing metal halide additives and cathodes containing SBR binders for secondary batteries)

L117 ANSWER 3 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:546300 HCAPLUS

DOCUMENT NUMBER: 143:81073

TITLE: Secondary **nonaqueous electrolyte** battery

INVENTOR(S): Miyake, Masahide; Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori; Fujimoto, Masahisa

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005166536	A	20050623	JP 2003-405836	20031204
US 2005136327	A1	20050623	US 2004-999997	20041201
PRIORITY APPLN. INFO.:			JP 2003-405836	A 20031204

AB The battery has a **S**-containing **cathode**, an **anode** containing a **Li**-intercalating material, and a **nonaq. electrolyte**; where the **electrolyte** has ≥ 1 1st solvent, selected from cyclic and linear ethers, and a 2nd solvent, comprising an ordinary temperature molten salt having m.p. $\leq 60^\circ$, at a volume ratio 0.1-40:60-99.9; and further contains **lithium polysulfide** in a saturated state.

IT 7704-34-9, **Sulfur**, uses
 RL: DEV (Device component use); USES (Uses)
 (**electrolytes** containing ethers, ordinary temperature molten salts and **lithium polysulfide** for secondary **lithium batteries**)

RN 7704-34-9 HCAPLUS

CN Sulfur (CA INDEX NAME)

S

IC ICM H01M010-40

ICS H01M004-02; H01M004-38; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery **electrolyte** solvent ether molten salt **lithium polysulfide**

IT Battery **electrolytes**

Secondary batteries

(**electrolytes** containing ethers, ordinary temperature molten salts and **lithium polysulfide** for secondary **lithium batteries**)

IT 1072-47-5, 4-Methyl-1,3-dioxolane 7704-34-9, **Sulfur**, uses 9080-49-3, Polysulfide 12136-58-2, **Lithium sulfide** 74432-42-1, **Lithium polysulfide** 268536-05-6, Trimethyl propyl ammonium bis(trifluoromethyl sulfonyl) imide

RL: DEV (Device component use); USES (Uses)
 (**electrolytes** containing ethers, ordinary temperature molten salts and **lithium polysulfide** for secondary **lithium batteries**)

L117 ANSWER 4 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:522762 HCAPLUS
 DOCUMENT NUMBER: 143:46051
 TITLE: Secondary **nonaqueous electrolyte** battery
 INVENTOR(S): Dojo, Kazunori; Itaya, Shoji; Koga, Hideyuki; Miyake, Masahide; Fujimoto, Masahisa
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005158313	A	20050616	JP 2003-391629	20031121
PRIORITY APPLN. INFO.:			JP 2003-391629	20031121

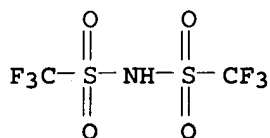
AB The batter has a **cathode** containing **S**, an **anode** containing a **Li**-intercalating material, and a **nonaq. electrolyte** solution; where the **electrolyte** solution contains a 1st solvent selected from a cyclic ether and/or a linear ether and a 2nd solvent comprising an ordinary temperature molten salt having m.p. $\leq 60^\circ$ at a volume ratio of 99.9-80:0.1-2; and, furthermore, contains **lithium polysulfide** in a saturated state.

IT 7704-34-9, Sulfur, uses 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (electrolytes solns. containing ethers and ordinary temperature molten salts for secondary batteries)

RN 7704-34-9 HCAPLUS
 CN Sulfur (CA INDEX NAME)

S

RN 90076-65-6 HCAPLUS
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary battery electrolyte ether ordinary temp molten
 salt; battery electrolyte satd lithium
 polysulfide
 IT 112-49-2, 2,5,8,11-Tetraoxadodecane 143-24-8, Tetraethylene glycol
 dimethyl ether 7704-34-9, Sulfur, uses
 9080-49-3, Polysulfide 12136-58-2, Lithium sulfide
 90076-65-6 216299-72-8 268536-05-6, Trimethyl propyl
 ammonium bis(trifluoromethyl sulfonyl) imide
 RL: DEV (Device component use); USES (Uses)
 (electrolytes solns. containing ethers and ordinary temperature
 molten salts for secondary batteries)

L117 ANSWER 5 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:258933 HCAPLUS

DOCUMENT NUMBER: 142:301072

TITLE: Cathode sub-active material and cathode active
 material, and secondary nonaqueous-
 electrolyte battery

INVENTOR(S): Sakamoto, Takako

PATENT ASSIGNEE(S): Nichia Chemical Industries Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005078953	A	20050324	JP 2003-308406	200309 01
PRIORITY APPLN. INFO.:				200309 01
				200309 01

AB The claimed sub-active material consists of a spinel-structure Li transition metal mixed oxide containing ≥ 1 element selected from Group 2, 13, 14, and halogens and containing Li at 16c site. Alternatively, the sub-active material is represented as $\text{Li}1+a+b\text{M}\text{cMn}2-b-\text{cDdXeBfSgO}4+h$ ($\text{M} = \text{Al}$ and/or Mg ; $\text{D} = \text{Ti}$, Zr , Hf ; $\text{X} = \text{F}$, Cl , Br , I ; a is composition ratio of Li in 16c; b is composition ratio of Li in 16d; $0 < a < 1.0$; $-0.2 \leq b \leq 0.2$; $c = 0-0.2$; $d = 0-0.1$; $e = 0-0.05$; $f = 0-0.02$; $g = 0-0.1$; $-0.5 \leq h \leq 0.5$). The claimed cathode active material consists of the above sub-active material and a main active material containing a Li transition metal mixed oxide. The claimed battery is equipped with the above cathode active material and an anode containing a Li-intercalating C or a Li-intercalating compound. The battery provides high tolerance for overdischarging, long cycle life, and suppressed expansion.

ICM H01M004-58

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 7704-34-9, Sulfur, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(cathode sub components; lithium transition metal mixed

oxide sub-active material in cathode for nonaq. battery)

L117 ANSWER 6 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:857017 HCAPLUS
DOCUMENT NUMBER: 141:352733
TITLE: Low temperature electrochemical cells
INVENTOR(S): Mikhaylik, Yuriy V.
PATENT ASSIGNEE(S): Moltech Corporation, USA
SOURCE: U.S. Pat. Appl. Publ., 12 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004202936	A1	20041014	US 2003-411999	20030410
US 7189477	B2	20070313	US 2003-411999	20030410

PRIORITY APPLN. INFO.: 20030410

AB Disclosed is an electrochem. cell comprising a **lithium anode** and a **sulfur-containing cathode** and a **nonaq. electrolyte solvent**. In the fully charged state of the cell the concentration of **lithium** ions is preferably less than 0.3M. The cell delivers high discharge capacity at discharge rates, for example, C/5, over temps. ranges of from +25° to -20°. Also disclosed is a battery including an electrochem. cell according to the invention and a device that utilizes such a battery to derive power.

IC ICM H01M004-58
ICS H01M006-16

INCL 429231900; 429231950; 429333000; 429335000; 429338000; 429342000; 429331000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

L117 ANSWER 7 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:675721 HCAPLUS
DOCUMENT NUMBER: 139:167015
TITLE: Secondary **nonaqueous electrolyte** battery
INVENTOR(S): Liu, Hsing-Chiang
PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003242964	A	20030829	JP 2002-42823	

200202
20

PRIORITY APPLN. INFO.:

JP 2002-42823

200202
20

AB The battery a Li, Li alloy, or Li intercalating anode and a cathode, which contains polymer electrolyte covered S. The battery may also have polymer electrolyte layers between the separator and the electrodes, and the anode may have a F containing coating.

IT 7704-34-9, Sulfur, uses
 RL: DEV (Device component use); USES (Uses)
 (cathodes containing polymer electrolyte coated sulfur for secondary lithium batteries)

RN 7704-34-9 HCAPLUS

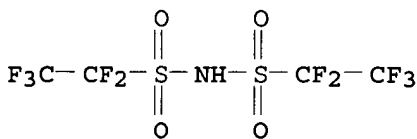
CN Sulfur (CA INDEX NAME)

S

IT 132843-44-8
 RL: DEV (Device component use); USES (Uses)
 (cathodes containing polymer electrolyte coated sulfur-acetylene black for secondary lithium batteries)

RN 132843-44-8 HCAPLUS

CN Ethanesulfonamide, 1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-02

ICS H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery cathode polymer

electrolyte coating sulfur

IT Battery anodes

(anodes with fluoride containing coatings in for secondary lithium batteries with cathodes containing polymer electrolyte coated sulfur)

IT Battery cathodes

(cathodes containing polymer electrolyte coated sulfur for secondary lithium batteries)

IT Carbon black, uses

Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(cathodes containing polymer electrolyte coated sulfur-acetylene black for secondary lithium

batteries)
 IT Secondary batteries
 (lithium; anodes with fluoride containing
 coatings in for secondary lithium batteries with
 cathodes containing polymer electrolyte coated
 sulfur)
 IT 7789-24-4, Lithium fluoride, uses
 RL: DEV (Device component use); USES (Uses)
 (anodes with fluoride containing coatings in for secondary
 lithium batteries with cathodes containing polymer
 electrolyte coated sulfur)
 IT 7704-34-9, Sulfur, uses
 RL: DEV (Device component use); USES (Uses)
 (cathodes containing polymer electrolyte coated
 sulfur for secondary lithium batteries)
 IT 25322-68-3, Peo 132843-44-8
 RL: DEV (Device component use); USES (Uses)
 (cathodes containing polymer electrolyte coated
 sulfur-acetylene black for secondary lithium
 batteries)

L117 ANSWER 8 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:511642 HCAPLUS

DOCUMENT NUMBER: 139:55551

TITLE: Secondary nonaqueous
 electrolyte battery

INVENTOR(S): Miyake, Masahide; Fujimoto, Masahisa; Koga,
 Hideyuki; Tarui, Hisaki; Fujitani, Shin

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: PCT Int. Appl., 82 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003054986	A1	20030703	WO 2002-JP13405	200212 20
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2002366928	A1	20030709	AU 2002-366928	200212 20
CN 1610980	A	20050427	CN 2002-823205	200212 20
US 2005019655	A1	20050127	US 2004-495106	200212 20

PRIORITY APPLN. INFO.: JP 2001-389259 A 200405
10
200112
21
JP 2002-178142 A 200206
19
WO 2002-JP13405 W 200212
20

AB The battery uses S as cathode active mass and a nonaq. electrolyte solution m. $\leq 60^\circ$.
The electrolyte solution may also contain reduction products of S, may use a solvent containing cyclic or linear ether or fluorinated carbonate, and the electrolyte salt is a Li salt, which may be mixed with a quaternary ammonium salt. Preferably, the anode is a Li intercalating anode.

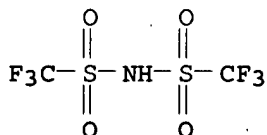
IT 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(cathodes for secondary lithium/
sulfur batteries with low m.p. electrolyte
solns.)

RN 7704-34-9 HCAPLUS
CN Sulfur (CA INDEX NAME)

S

IT 90076-65-6
RL: DEV (Device component use); USES (Uses)
(compsn. of low m.p. electrolyte solns. for secondary
lithium/sulfur batteries)

RN 90076-65-6 HCAPLUS
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-02
ICS H01M004-60; H01M004-62; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium sulfur battery low mp
electrolyte soln compn
IT Battery electrolytes

(compsn. of low m.p. electrolyte solns. for secondary lithium/sulfur batteries)

IT Secondary batteries
(secondary lithium/sulfur batteries with low m.p. electrolyte solns.)

IT 1317-40-4, Copper sulfide (CuS) 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(cathodes for secondary lithium/sulfur batteries with low m.p. electrolyte solns.)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 646-06-0, 1,3-Dioxolane 661-36-9, Tetramethylammonium fluoroborate 12136-58-2, Lithium sulfide 21324-40-3, Lithium hexafluorophosphate 90076-65-6 210230-43-6 216299-76-2 268536-05-6 497220-96-9 548478-05-3
RL: DEV (Device component use); USES (Uses)
(compsn. of low m.p. electrolyte solns. for secondary lithium/sulfur batteries)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L117 ANSWER 9 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:279729 HCAPLUS

DOCUMENT NUMBER: 138:306762

TITLE: Electrode material, its manufacture, electrode using the material, and secondary battery using the electrode

INVENTOR(S): Takeuchi, Masataka; Taguchi, Isamu

PATENT ASSIGNEE(S): Showa Denko K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003109594	A	20030411	JP 2001-304868	20011001
PRIORITY APPLN. INFO.:				JP 2001-304868
				20011001

AB The electrode material has a copolymer of a S containing compound on a carbonaceous material; and is manufactured by forming the copolymer or reacting an isothiocyanate group containing compound with a [S-alkyl] thiourea group in the presence of the carbonaceous material. The electrode contains the above electrode material and is capable of charge-discharge reaction by Li intercalation and decalation. The battery has the electrode and a nonaq. electrolyte.

IC ICM H01M004-58

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT Battery electrodes
 Secondary batteries
 (manufacture of **cathodes** containing **S** containing copolymer
 coated carbonaceous materials for secondary batteries)
 IT Carbon black, uses
 RL: DEV (Device component use); USES (Uses)
 (manufacture of **cathodes** containing **S** containing copolymer
 coated carbonaceous materials for secondary batteries)
 IT 7439-93-2, **Lithium**, uses
 RL: DEV (Device component use); USES (Uses)
 (**anode**; manufacture of **cathodes** containing **S**
 containing copolymer coated carbonaceous materials for secondary
 batteries)
 IT 4044-65-9, p-Phenylene diisothiocyanate 330463-58-6 330463-59-7
 509152-39-0 509152-40-3
 RL: DEV (Device component use); USES (Uses)
 (manufacture of **cathodes** containing **S** containing copolymer
 coated carbonaceous materials for secondary batteries)
 IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (vapor phase growing; manufacture of **cathodes** containing
S containing copolymer coated carbonaceous materials for
 secondary batteries)

L117 ANSWER 10 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:781293 HCAPLUS
 DOCUMENT NUMBER: 135:333319
 TITLE: Long cycle life lithium batteries
 INVENTOR(S): Geronov, Yordan M.
 PATENT ASSIGNEE(S): Moltech Corporation, USA
 SOURCE: PCT Int. Appl., 30 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001080329	A2	20011025	WO 2001-US12541	20010417
WO 2001080329	A3	20020808		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6344293	B1	20020205	US 2000-551285	20000418
AU 2001053625	A5	20011030	AU 2001-53625	

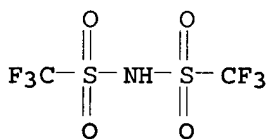
PRIORITY APPLN. INFO.: US 2000-551285 A 200104
17
200004
18
WO 2001-US12541 W 200104
17

AB The batteries have a Li anode, a cathode comprising an electroactive sulfur-containing material, and a nonaq. electrolyte solution between the electrodes; where the electrolyte solution contains ≥ 1 lithium salts, ≥ 1 nonaq. solvents, and ≥ 3000 ppm water for cycle life enhancement.

IT 90076-65-6
RL: DEV (Device component use); USES (Uses)
(electrolyte solns. with controlled amount of added water in secondary lithium/sulfur batteries for long cycle life)

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IT 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(sulfur cathodes in secondary lithium batteries using electrolyte solns. with controlled amount of added water)

RN 7704-34-9 HCAPLUS

CN Sulfur (CA INDEX NAME)

S

IC ICM H01M

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery electrolyte water cycle life

IT Battery electrolytes
(electrolyte solns. with controlled amount of added water in secondary lithium/sulfur batteries for long cycle life)

IT Secondary batteries
(lithium; electrolyte solns. with controlled amount of added water in secondary lithium/sulfur

batteries for long cycle life)

IT Battery cathodes
(sulfur cathodes in secondary lithium
batteries using electrolyte solns. with controlled amount
of added water)

IT 110-71-4 646-06-0, 1,3-Dioxolane 90076-65-6
RL: DEV (Device component use); USES (Uses)
(electrolyte solns. with controlled amount of added water
in secondary lithium/sulfur batteries for
long cycle life)

IT 7732-18-5, Water, uses
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte solns. with controlled amount of added water
in secondary lithium/sulfur batteries for
long cycle life)

IT 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(sulfur cathodes in secondary lithium
batteries using electrolyte solns. with controlled amount
of added water)

L117 ANSWER 11 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:229206 HCAPLUS

DOCUMENT NUMBER: 134:254657

TITLE: Secondary lithium batteries

INVENTOR(S): Nakagiri, Yasushi; Bito, Yasuhiko; Matsuda,
Hiromu

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001022520	A1	20010329	WO 2000-JP6335	200009 14
W: CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1143547	A1	20011010	EP 2000-961039	200009 14
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
PRIORITY APPLN. INFO.:			JP 1999-270404	A 199909 24
			JP 1999-270474	A 199909 24
			WO 2000-JP6335	W 200009 14

AB The batteries use S or Li complexes with S or thiol- or thiolate group-containing organic S compds. for **cathodes**, Li1-xMxN (M = Ti, V, Cr, Mn, Fe, Co, Ni, and/or Cu, $0.1 \leq x \leq 0.8$) for **anodes**, and a **nonaq. electrolyte** solution. The **anodes** may also contain an alloy or a metal oxide.

IC ICM H01M010-40
ICS H01M004-58; H01M004-60; H01M004-38; H01M004-48; H01M004-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery; lithium organosulfur complex cathode secondary lithium battery; lithium transition metal nitride **anode lithium** battery

IT Battery **anodes**
(compns. of **lithium** transition metal nitride **anodes** for secondary **lithium** batteries)

IT Secondary batteries
(lithium; secondary lithium batteries containing lithium organic sulfur compound complex **cathodes** and lithium transition metal nitride **anodes**)

IT 12763-92-7 113443-18-8, Silicon oxide (SiO)
RL: DEV (Device component use); USES (Uses)
(compns. of lithium transition metal nitride **anodes** for secondary **lithium** batteries)

IT 66102-93-0, Cobalt lithium nitride 174421-80-8, Cobalt lithium nitride ($\text{Co}_0.4\text{Li}_{2.6}\text{N}$)
RL: DEV (Device component use); USES (Uses)
(lithium transition metal nitride **anodes** for secondary **lithium** batteries)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L117 ANSWER 12 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:105760 HCAPLUS

DOCUMENT NUMBER: 126:243287

TITLE: Study on the reduction species of sulfur by alkali metals in nonaqueous solvents

AUTHOR(S): Tobishima, Shin-Ichi; Yamamoto, Hideo; Matsuda, Minoru

CORPORATE SOURCE: Inst. Chemical Reaction Sci., Tohoku Univ., Sendai, 980-77, Japan

SOURCE: Electrochimica Acta (1997), 42(6), 1019-1029
CODEN: ELCAAV; ISSN: 0013-4686

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Rechargeable cells with a **sulfur cathode**, a **lithium anode** and a **nonaq. electrolyte** operating at ambient temperature have been extensively studied as a possible application of **sulfur** combined with **nonaq. solvent**. However, the behavior of the chemical species formed by the reduction of **sulfur** with alkali metals in **nonaq. solvent** has not yet been clarified. In this report, **sulfur** is reduced in THF by alkali metals (M: Na, K, Li and Cs), by anthracene radical anions or by diphenylethylene dimer dianions with alkali metal counter cations mainly under the exptl. condition of $[\text{S}]/[\text{M}] > 0.25$. The system produced by the reduction is the yellow solution consisting of polysulfide dianions (S_m^{2-} , $m > 1$) and radical anions ($\text{S}_n^{\cdot-}$, $n > 1$) which changes into a blue solution by the addition of

hexamethylphosphoric triamide with a much higher polarity than THF. The influence of the kind of alkali metal, the temperature and the addition of solvents such as crown ether on the behavior of the chemical species formed are examined by UV-Vis electronic spectra, ESR spectra and Raman spectra measurements. In addition, γ -irradiation with ^{60}Co was carried out to reduce sulfur in glassy solid 2-methyl-THF at -196°C . Furthermore, the reaction between the yellow solution and aliphatic bromide is investigated. As a result, it is revealed that the yellow species is S_4^{2-} , the blue species is S_3^- and several polysulfide dianions and radical anions are in a state of equilibrium

CC 67-3 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 72

L117 ANSWER 13 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1994:560817 HCAPLUS

DOCUMENT NUMBER: 121:160817

TITLE: Thermal lithium battery

INVENTOR(S): Crepy, Gilles; Mahieu, Gerard; Mimoun, Michel

PATENT ASSIGNEE(S): SAFT SA, Fr.

SOURCE: Fr. Demande, 15 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2697676	A1	19940506	FR 1992-12958	19921029
FR 2697676	B1	19941209	FR 1992-12958	19921029

PRIORITY APPLN. INFO.: FR 1992-12958

AB The battery contains a Li or Li alloy anode, a S and oxides cathode and electrolyte containing Li salts at 0.5-3.0 mol Li salt/kg DMS.

IC ICM H01M006-36

ICS H01M006-20

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT lithium alloy, base

RL: USES (Uses)

(anode, in nonaq. thermal lithium battery)

IT 7439-93-2, Lithium, uses

RL: USES (Uses)

(anode, in nonaq. thermal lithium battery)

IT 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium pentoxide,

uses 7704-34-9, Sulfur, uses 12068-85-8, Iron sulfide

(fes2)

RL: DEV (Device component use); USES (Uses)

(cathode containing, in nonaq. thermal lithium battery)

IT 7447-41-8, Lithium chloride, uses 7550-35-8,

Lithium bromide 7789-24-4, Lithium fluoride,

uses 29935-35-1, Lithium hexafluoroarsenate

RL: USES (Uses)
 (electrolyte, in nonaq. thermal
 lithium battery)

L117 ANSWER 14 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1994:249305 HCAPLUS
 DOCUMENT NUMBER: 120:249305
 TITLE: High-energy battery and its anode
 INVENTOR(S): Beard, Kirby W.
 PATENT ASSIGNEE(S): Alliant Techsystems Inc., USA
 SOURCE: U.S., 8 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 5284721	A	19940208	US 1990-561132	199008 01
PRIORITY APPLN. INFO.: US 1990-561132				199008 01

AB The battery comprises an anode of a reversible Li
 -intercalation compound $\text{Li}_x\text{M}_a\text{X}_b$, where M is selected from Sc, Ti, Y,
 and/or Zr; X is selected from O, S, Se, and Te; and x, a,
 and b are nos. representing relative combining ratios; a cathode
 selected from SO_2 , SOCl_2 , graphite fluoride, FeS_2 , CuF_2 , PbI_2 , MnO_2 ,
 $\text{Bi}_2\text{Pb}_{205}$, and V_2O_5 ; and a nonaq. organic ester-based
 electrolyte containing an amount of a Li salt and CO_2
 additive. The battery comprises an anode of Li_xTiO_2 and/or
 $\text{Li}_x\text{Ti}_2\text{O}_3$, a cathode of Li_yCoO_2 , where $0 < y \leq 1.0$, and the
 above mentioned electrolyte.

IC ICM H01M006-14

INCL 429194000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery lithium org electrolyte; titanium oxide
 lithiated battery anode; cobalt oxide lithiated battery cathode

IT 96352-80-6, Lithium molybdenum selenide 122827-13-8,
 Lithium molybdenum sulfide ($\text{Li}_{2.5}\text{MoS}_3$) 154600-64-3, Cobalt
 lithium oxide ($\text{CoLi}_{2.402}$)

RL: USES (Uses)

(anodes, for organic-electrolyte batteries)

IT 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium pentoxide,
 uses 7446-09-5, Sulfur dioxide, uses 7719-09-7,
 Thionyl chloride 7789-19-7, Copper difluoride 10101-63-0, Lead
 diiodide 11113-63-6, Graphite fluoride 12068-85-8, Iron
 disulfide 12356-42-2, Bismuth lead oxide ($\text{Bi}_2\text{Pb}_{205}$)

RL: USES (Uses)

(cathodes, for organic-electrolyte batteries)

L117 ANSWER 15 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1993:476373 HCAPLUS

DOCUMENT NUMBER: 119:76373

TITLE: Nonaqueous-electrolyte
 secondary battery

INVENTOR(S): Takahashi, Masatoshi; Watanabe, Hiroshi;
Ooshita, Ryuji; Yoshimura, Seiji; Furukawa,
Saneshiro
PATENT ASSIGNEE(S): Sanyo Electric Co, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05082167	A	19930402	JP 1991-245931	199109 25
JP 3157209	B2	20010416	JP 1991-245931	199109 25

PRIORITY APPLN. INFO.: JP 1991-245931

AB The battery uses a cathode having ≥ 3.8 V voltage at charged state, a C anode, and a Li electrolyte solution containing propylene carbonate and di-Me carbonate as solvents. Preferably, the electrolyte is selected from LiSO₃CF₃, LiPF₆, LiBF₄, LiAsF₆, LiSbF₆, and LiClO₄; the anode is coke, pyrolytic C, or graphite; and the cathode is oxide(s) of Mn, Co, and/or Ni. These batteries have long shelf and storage life.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST propylene carbonate battery electrolyte solvent; dimethyl carbonate battery electrolyte solvent; lithium battery electrolyte solvent

IT Battery electrolytes
(lithium salts, propylene carbonate-di-Me carbonate solvent mixts. for)

IT Batteries, secondary
(lithium/manganese oxide and lithium/cobalt oxide, electrolyte solvent mixts. for)

IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate
RL: USES (Uses)
(electrolyte solvent mixts containing, for secondary lithium batteries)

L117 ANSWER 16 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1990:65278 HCAPLUS

DOCUMENT NUMBER: 112:65278

TITLE: Cells containing solvated electron
lithium negative
electrodes

AUTHOR(S): Uribe, Francisco A.; Semkow, Krystyna W.;
Sammells, Anthony F.

CORPORATE SOURCE: Eltron Res., Inc., Aurora, IL, 60504, USA

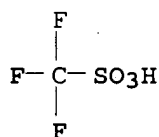
SOURCE: Journal of the Electrochemical Society (1989),
136(12), 3559-65

CODEN: JESOAN; ISSN: 0013-4651

DOCUMENT TYPE: Journal

LANGUAGE: English

- AB Preliminary work performed on a novel solvated electron **Li neg. electrode** is discussed, which may have application in either high energy-d. secondary or reserve battery systems. The studied electrode consisted of **Li** initially dissolved in liquid NH_3 to give a solvated electron solution. Containment of this liquid neg. active material from direct contact with a liquid **nonaq. electrolyte** present in the cell's **pos. electrode** compartment was addressed by using a **Li-intercalated**, electronically conducting, ceramic membrane of the general composition Li_xWO_2 ($0.1 < x < 1.0$). Secondary electrochem. cells having the general configuration **Li**, $\text{NH}_3/\text{Li}_x\text{WO}_2/\text{NAE}/\text{TiS}_2$ using **nonaq. electrolytes** (NAE) based upon both propylene carbonate and 2-methyltetrahydrofuran are described. Depending upon initial **Li** activity in the neg. electrode compartments, the cell possessed an initial open-circuit potential (OCP) of 2.1-2.5 V. Cells were also prepared using $\text{SO}_2, \text{CuCl}_2$ as the pos. electroactive material (OCP 3.44 V). Both cells, which were operated at ambient pressure (low temperature) and ambient temperature (high pressure), showed evidence of electrochem. reversibility.
- IT 33454-82-9, **Lithium** trifluoromethanesulfonate
RL: PRP (Properties)
(in organic solvent, with solvated electron **lithium neg. electrode** in electrolytic cell)
- RN 33454-82-9 HCAPLUS
- CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

- CC 72-2 (Electrochemistry)
Section cross-reference(s): 52
- ST solvated electron neg electrode battery; **lithium** liq ammonia cathode; **nonaq electrolyte** open circuit potential
- IT Electric potential
(open-circuit, of system containing solvated electron **lithium neg. electrode**)
- IT 7440-44-0, Carbon, uses and miscellaneous
RL: USES (Uses)
(anode, in electrolytic cell with solvated electron **lithium neg. electrode**)
- IT 12039-13-3, Titanium disulfide
RL: PRP (Properties)
(electrode, in electrolytic cell, with solvated electron **lithium neg. cathode**)
- IT 125123-55-9P, **Lithium** tungsten oxide ($\text{Li}_0.4\text{WO}_2$)
125123-56-0P, **Lithium** tungstate ($\text{Li}_0.35\text{WO}_2$)
125123-57-1P, **Lithium** tungstate ($\text{Li}_0.14\text{WO}_2$)
125123-58-2P, **Lithium** tungsten oxide ($\text{Li}_{0.1-1}\text{WO}_2$)

- RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in **electrolytic cell** with solvated
electron lithium neg. electrode)
- IT 7446-09-5, **Sulfur dioxide**, uses and miscellaneous
7447-39-4, **Copper dichloride**, uses and miscellaneous
RL: USES (Uses)
(in **electrolytic cell** with solvated electron
lithium neg. cathode)
- IT 75-05-8, **Acetonitrile**, uses and miscellaneous 96-47-9,
2-Methyltetrahydrofuran
RL: USES (Uses)
(in **electrolytic cell** with solvated electron
lithium neg. electrode)
- IT 29935-35-1, **Lithium hexafluoroarsenate**
RL: PRP (Properties)
(in **electrolytic cell** with solvated electron
lithium neg. electrode)
- IT 33454-82-9, **Lithium trifluoromethanesulfonate**
RL: PRP (Properties)
(in organic solvent, with solvated electron **lithium
neg. electrode in electrolytic cell**)
- IT 7664-41-7, **Ammonia**, properties
RL: PRP (Properties)
(solvated electrons in, with **lithium neg.
electrode in electrolytic cell**)

L117 ANSWER 17 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1988:513532 HCAPLUS
DOCUMENT NUMBER: 109:113532
TITLE: Battery electrode materials
INVENTOR(S): Fujii, Masayuki; Toda, Hideo; Wakayama, Tatsuo
PATENT ASSIGNEE(S): Mitsubishi Petrochemical Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 63143746	A	19880616	JP 1986-288934	198612 05
PRIORITY APPLN. INFO.:			JP 1986-288934	198612 05

- AB Battery electrode materials consist of S and I and contain vulcanizable polymer. Thus, 0.1 g polymeric S obtained by pouring molten S in water was pulverized and mixed with Kketjenblack 0.1, liquid polybutadiene 0.1, and I 1 g, and the mixture was pressed at 160° to form a firm, 1 mm-thick sheet. A battery having this sheet as cathode, a **Li anode**, and 1M LiClO₄/γ-butyrolactone **electrolyte**, showed initial voltage of 3.4 V. At constant-current discharge at 8 mA, the voltage was 2 V after 12.9 h, and .apprx.0 V after further discharge for 5.2 h.
- IT 7704-34-9, **Sulfur**, uses and miscellaneous

RL: USES (Uses)
 (cathodes from iodine-vulcanizable polymer-, for nonaq
 .-electrolyte batteries)

RN 7704-34-9 HCAPLUS

CN Sulfur (CA INDEX NAME)

S

IC ICM H01M004-36

ICS H01M004-02; H01M004-60; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 39

ST battery cathode sulfur iodine; polymer
 vulcanized iodine sulfur cathode

IT Rubber, butadiene, uses and miscellaneous

RL: USES (Uses)

(cathodes from iodine-sulfur-, for
 nonaq.-electrolyte batteries)

IT Cathodes

(battery, sulfur-iodine-vulcanized polymer,
 nonaq.-electrolyte)

IT 7704-34-9, Sulfur, uses and miscellaneous

RL: USES (Uses)

(cathodes from iodine-vulcanizable polymer-, for nonaq
 .-electrolyte batteries)

IT 7553-56-2, Iodine, uses and miscellaneous

RL: USES (Uses)

(cathodes from sulfur-vulcanizable polymer-,
 for nonaq.-electrolyte batteries)

IT 9003-17-2

RL: USES (Uses)

(rubber, cathodes from iodine-sulfur-, for
 nonaq.-electrolyte batteries)

L117 ANSWER 18 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1988:513531 HCAPLUS

DOCUMENT NUMBER: 109:113531

TITLE: Battery electrode materials

INVENTOR(S): Fujii, Masayuki; Toda, Hideo; Wakayama, Tatsuo

PATENT ASSIGNEE(S): Mitsubishi Petrochemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 63143745	A	19880616	JP 1986-287765	198612 04
PRIORITY APPLN. INFO.:			JP 1986-287765	198612 04

AB Battery electrode materials consist of S and I. Thus, 0.1

g polymeric S obtained by pouring molten S in water was pulverized and mixed with 0.1 g Ketjenblack and 1 g I, and the mixture was pressed at 160° to form a sheet. A battery having this sheet as cathode, a Li anode, and 1M LiClO₄/γ-butyrolactone electrolyte showed initial voltage of 3.4 V. By constant-current discharge at 8 mA, the voltage was 2 V after 13.5 h, and .apprx.0 V after further discharge for 4.6 h.

IT 7704-34-9, Sulfur, uses and miscellaneous
RL: USES (Uses)
(cathodes containing iodine and, for nonaq.-
electrolyte batteries)

RN 7704-34-9 HCAPLUS
CN Sulfur (CA INDEX NAME)

S

IC ICM H01M004-36
ICS H01M004-02; H01M004-60
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Cathodes
(battery, sulfur-iodine, nonaq.-
electrolyte)

IT 7704-34-9, Sulfur, uses and miscellaneous
RL: USES (Uses)
(cathodes containing iodine and, for nonaq.-
electrolyte batteries)

IT 7553-56-2, Iodine, uses and miscellaneous
RL: USES (Uses)
(cathodes containing sulfur and, for
nonaq.-electrolyte batteries)

L117 ANSWER 19 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1986:176619 HCAPLUS
DOCUMENT NUMBER: 104:176619
TITLE: Nonaqueous batteries
INVENTOR(S): Eda, Nobuo; Fujii, Takafumi; Morita, Teruyoshi;
Koshina, Hide; Murakami, Kaoru
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 60246565	A	19851206	JP 1984-100952	198405 18
JP 02061774	B	19901221		
PRIORITY APPLN. INFO.:			JP 1984-100952	198405 18

AB Nonaq. .apprx.1.5-V batteries use a mixture of CuFeS₂ and CuFeS₂-x (x

≤0.24) as cathode material with or without other material such as CuO, FeS, FeS₂, Bi₂O₃, CoO, Co₂O₅ and Co₃O₄. Use of this cathode increases discharge efficiency under heavy load. Thus, 50 g pulverized chalcopryrite (98% CuFeS₂) was heated at 700° in H₂ for 1.5 h to obtain CuFeS_{1.78}. A cathode prepared from CuO 60, 1:4 CuFeS₂-CuFeS_{1.78} mixture 40, acetylene black 8, and a fluoropolymer binder 7 parts was used in a battery having a Li anode and a 0.5M LiClO₄ in 1:1 propylene carbonate-MeOCH₂CH₂OMe electrolyte. The resp. material efficiencies of the cathodes of this battery discharged through 100 and 13-KΩ load were 52.5 and 73.0%. The resp. values for the CuFeS₂ cathode were 91.2 and 86.5%. The difference is related to the larger crystalline interfacial distance of the reduced product that facilitates Li-ion transfer.

IC ICM H01M004-58

CC 72-3 (Electrochemistry)

Section cross-reference(s): 52

IT 12015-76-8D, sulfur-deficient

RL: PRP (Properties)

(cathodes containing, chalcopryrite, for nonaq.-electrolyte batteries)

IT 1308-56-1, uses and miscellaneous

RL: USES (Uses)

(cathodes, containing-partly reduced chalcopryrite, for nonaq.-electrolyte batteries)

L117 ANSWER 20 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1985:223446 HCAPLUS

DOCUMENT NUMBER: 102:223446

TITLE: Nonaqueous-electrolyte battery

PATENT ASSIGNEE(S): Toshiba Corp., Japan; Toshiba Battery Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 59203376	A	19841117	JP 1983-78465	19830504
PRIORITY APPLN. INFO.:			JP 1983-78465	19830504

AB The title battery consists of a light metal anode, a separator, and a cathode of a S or P oxyhalide. The electrode lead is made of a shape memory alloy wire. Explosion from internal shorting in the battery is prevented. Thus, a spiral battery consisting of a Li anode containing Ni mesh collector, an acetylene black-PTFE cathode containing a stainless steel mesh collector, a glass-fiber separator, and a LiAlCl₄-SOCl₂ electrolyte had an electrode lead wire made of Tinel Ti-Ni alloy [75687-10-4].

IC H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

IT Electrodes
 (battery, shape memory alloy wire lead for **nonaq.-electrolyte**)
 IT 75687-10-4
 RL: USES (Uses)
 (electrode leads, battery containing, **nonaq.-electrolyte**)

L117 ANSWER 21 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1984:614069 HCAPLUS
 DOCUMENT NUMBER: 101:214069
 TITLE: An electrochemical cell containing sulfur dioxide as a cathode depolarizer
 INVENTOR(S): Ksenzhek, Oktavian Stanislavovi; Shembel, Elena Moiseevna; Litvinova, Valentina Ivanovna; Martynenko, Tamara Leontievna; Raikhelson, Leonid Borisovich
 PATENT ASSIGNEE(S): Dnepropetrovsk Chemical-Technological Institute, USSR
 SOURCE: Indian, 26 pp.
 CODEN: INXXAP
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
IN 152921	A1	19840505	IN 1981-CA1034	19810916
PRIORITY APPLN. INFO.:			IN 1981-CA1034	19810916

AB A battery comprises an anode of a metal (Li,Na) capable of reducing SO₂; a cathode of a porous material (carbonaceous material) inert to SO₂ but one in which SO₂ can be reduced and having electron-type conductivity and initially polarized to a pos. potential of 4.5-4.7 V relative to the anode; and a **nonaq. electrolyte** containing SO₂, ≥ 1 aprotic organic solvent with a donor number of 20-50, and an **electrolyte** salt inert to SO₂ and the anode. Thus, a Li battery was assembled from 1.8M LiBr in 1:3.3 propylene carbonate-MeCN mixture containing 65 volume% SO₂, a 400-cm² Li anode, and a 400-cm² carbonaceous inert cathode preliminarily anodically polarized to 4.5 V (vs. Li electrode). The battery had an open-circuit voltage of 2.96 V. At a c.d. of 1.25 mA/cm², the discharge capacity of the battery was 8 A-h at 2.7 V.

IC ICM H01M011-00
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT **Electrolytic** polarization
 (anodic, of carbonaceous cathodes, for lithium-sulfur dioxide battery)

L117 ANSWER 22 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1983:146660 HCAPLUS
 DOCUMENT NUMBER: 98:146660

TITLE: Battery containing sulfur dioxide as cathode depolarizer
 INVENTOR(S): Ksenzhek, O. S.; Shembel, E. M.; Litvinova, V. I.; Martynenko, T. L.; Raikhel'son, L. B.; Sokolov, L. A.; Moskovskii, V. Z.
 PATENT ASSIGNEE(S): Dnepropetrovsk Chemical-Technological Institute, USSR
 SOURCE: Ger. Offen., 30 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3134060	A1	19830310	DE 1981-3134060	19810828
DE 3134060	C2	19861016		
US 4397921	A	19830809	US 1981-292486	19810813
GB 2103870	A	19830223	GB 1981-25499	19810820
GB 2103870	B	19851016		
JP 58048362	A	19830322	JP 1981-137661	19810901
FR 2513019	A1	19830318	FR 1981-17601	19810917
FR 2513019	B1	19841026		
PRIORITY APPLN. INFO.:			DE 1981-3134060	19810828

AB A battery comprises a metal anode capable of reducing SO₂, an elec. conductive porous inactive cathode which is in advance anodically polarized at 4.5-4.7 V vs. a Li electrode, and a nonaq. electrolyte containing SO₂, ≥1 aprotic organic solvent (donor number 20-50), and a salt which is inactive towards SO₂ and the metal. Thus, a battery was prepd from a Li anode, a C cathode polarized in advance at 4.5 V vs. a Li electrode, and an electrolyte from 1.8M LiBr in a 1:3.3 propylene carbonate-MeCN mixture containing 65 volume% SO₂. The battery showed an open-circuit voltage of 2.96 V. At a c.d. of 1.25 mA/cm², the discharge capacity of the battery was 8 A-h at 2.7 V.

IC H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Batteries, primary
 (lithium-sulfur dioxide, nonaq.-
 electrolyte, performance of)

L117 ANSWER 23 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1976:526994 HCAPLUS

DOCUMENT NUMBER: 85:126994

TITLE: Sealed lithium-reducible sulfur oxyhalide cell

INVENTOR(S): Roth, Walter L.; Farrington, Gregory C.
 PATENT ASSIGNEE(S): General Electric Co., USA
 SOURCE: U.S., 8 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3953228	A	19760427	US 1975-557583	19750312
PRIORITY APPLN. INFO.:			US 1975-557583	A 19750312

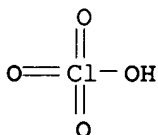
AB A sealed Li-reducible S oxyhalide battery comprises a casing; an anode positioned within the casing, the anode selected from the class consisting of Li, Li amalgam, and Li in a nonaq. electrolyte; a cathode positioned within the casing, the cathode consisting of a reducible S oxyhalide, and a reducible S oxyhalide with an ionic conductivity enhancing material; and a solid Li-Na aluminate electrolyte positioned within the casing between the anode and cathode. The solid electrolyte has an approx. composition of LiNaO.9Al₂O₃ of which 1.3-85% of the total alkali-ion content is Li. Thus, the resp. open-circuit voltages of Li-SOCl₂ and Li-AlCl₃-saturated SO₂Cl₂ batteries were 4.2 and 4.1 V. The chamber of the anode portion of each battery was provided with an electrolyte of propylene carbonate with dissolved LiClO₄ [7791-03-9] and NBu₄BF₄ [429-42-5].

IT 7791-03-9

RL: USES (Uses)
 (battery electrolyte containing, sealed lithium-sulfur oxyhalide)

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC H01M010-00

INCL 136006000FS

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 429-42-5 7791-03-9

RL: USES (Uses)

(battery electrolyte containing, sealed lithium-

IT sulfur oxyhalide)
 55957-48-7
 RL: USES (Uses)
 (battery solid electrolyte, sealed lithium-sulfur oxyhalide)

IT 7791-25-5
 RL: USES (Uses)
 (cathodes from aluminum chloride-saturated, in nonaq. sealed battery with lithium anode)

IT 7446-70-0, uses and miscellaneous
 RL: USES (Uses)
 (cathodes from sulfuryl chloride saturated with, in nonaq. sealed battery with lithium anode)

IT 7719-09-7
 RL: USES (Uses)
 (cathodes, in nonaq. sealed battery with lithium anode)

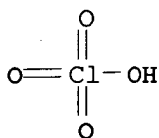
L117 ANSWER 24 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1976:526990 HCAPLUS
 DOCUMENT NUMBER: 85:126990
 TITLE: Sealed lithium-sulfur monochloride cell
 INVENTOR(S): Roth, Walter L.; Farrington, Gregory C.
 PATENT ASSIGNEE(S): General Electric Co., USA
 SOURCE: U.S., 7 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3953233	A	19760427	US 1975-559990	19750319
PRIORITY APPLN. INFO.:			US 1975-559990	A 19750319

AB A sealed Li-Scl battery comprises a casing; an anode positioned within the casing, the anode selected from the class consisting of Li, Li amalgam, and Li in a nonaq. electrolyte; a cathode positioned within the casing, the cathode consisting of SCl with an ionic conductivity enhancing material; and a solid Li-Na aluminate electrolyte positioned within the casing between the anode and cathode. The solid electrolyte has an approx. composition of LiNaO.9Al2O3 of which 1.3-85% of the total alkali-ion content is Li.

IT 7791-03-9
 RL: USES (Uses)
 (battery electrolyte containing, sealed lithium-sulfur monochloride)

RN 7791-03-9 HCAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC H01M010-00
 INCL 136006000FS
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 7439-93-2, uses and miscellaneous
 RL: USES (Uses)
 (anodes, in nonaq. sealed battery with sulfur
 monochloride cathode)
 IT 429-42-5 7791-03-9
 RL: USES (Uses)
 (battery electrolyte containing, sealed lithium-
 sulfur monochloride)
 IT 55957-48-7
 RL: USES (Uses)
 (battery solid electrolyte, sealed lithium-
 sulfur monochloride)
 IT 14989-32-3
 RL: USES (Uses)
 (cathodes, in nonaq. sealed battery with lithium
 anode)

L117 ANSWER 25 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1976:526988 HCAPLUS
 DOCUMENT NUMBER: 85:126988
 TITLE: Sealed lithium-solid sulfur cell
 INVENTOR(S): Farrington, Gregory C.; Roth, Walter L.
 PATENT ASSIGNEE(S): General Electric Co., USA
 SOURCE: U.S., 7 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3953231	A	19760427	US 1975-571556	197504 25
PRIORITY APPLN. INFO.:			US 1975-571556	A 197504 25

AB A sealed Li-solid S battery for ambient temperature operation comprises a casing; an anode positioned within the casing, the anode selected from the class consisting of Li, Li amalgam, and Li in a nonaq. electrolyte; a cathode positioned within the casing, the

cathode comprising solid S in a nonaq. electrolyte with an ionic conductivity enhancing material; and a solid Li-Na aluminate electrolyte positioned within the casing between the anode and cathode. The solid electrolyte has an approx. composition of $\text{LiNaO} \cdot 0.9\text{Al}_2\text{O}_3$ of which 1.3-85% of the total alkali-ion content is Li.

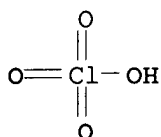
IT 7791-03-9

RL: USES (Uses)

(battery electrolyte containing, sealed lithium-sulfur)

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC H01M010-00

INCL 136006000LN

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Batteries, primary

(lithium-sulfur, sealed organic-electrolyte)

IT 7439-93-2, uses and miscellaneous

RL: USES (Uses)

(anodes, in nonaq. sealed battery with sulfur cathode)

IT 429-42-5 7791-03-9

RL: USES (Uses)

(battery electrolyte containing, sealed lithium-sulfur)

IT 55957-48-7

RL: USES (Uses)

(battery solid electrolyte, sealed lithium-sulfur)

IT 7704-34-9, uses and miscellaneous

RL: USES (Uses)

(cathodes, in nonaq. sealed battery with lithium anode)

L117 ANSWER 26 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1976:20232 HCAPLUS

DOCUMENT NUMBER: 84:20232

TITLE: Storage battery with lithium electrode

PATENT ASSIGNEE(S): Varta Batterie A.-G., Fed. Rep. Ger.

SOURCE: Fr. Demande, 6 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2236284	A1	19750131	FR 1974-16457	19740513
FR 2236284	B3	19770311		
DE 2334660	A1	19750123	DE 1973-2334660	19730707
PRIORITY APPLN. INFO.:				DE 1973-2334660 A
				19730707

AB The battery comprises a Li [7439-93-2] anode, a S [7704-34-9] cathode, and an organic solvent (dimethylcarbonate and 1,2-dimethoxyethane) - $\geq 15\%$ BF₃ [7637-07-2]. Optionally, the electrolyte may also contain LiBF₄ [14283-07-9], LiAlCl₄ [14024-11-4], or LiF [7789-24-4].

IC H01M

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium sulfur secondary battery; nonaq electrolyte secondary battery

IT 7789-24-4, uses and miscellaneous 14024-11-4 14283-07-9
RL: USES (Uses)

(battery electrolyte containing, nonaq.)

IT 7637-07-2, uses and miscellaneous
RL: USES (Uses)

(battery electrolyte, nonaq.)

L117 ANSWER 27 OF 27 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1969:508498 HCAPLUS

DOCUMENT NUMBER: 71:108498

TITLE: Electrochemical battery

PATENT ASSIGNEE(S): American Cyanamid Co.

SOURCE: Fr., 9 pp.

CODEN: FRXXAK

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 1541885		19681011	FR 1967-125784	19671025

AB The battery comprises SO₂ as a cathode depolarizing agent which does not have to be spatially separated from the anode. Preferred anode is Li or Na, and the preferred cathode is Pt or C, and the preferred electrolyte is Bu₄NClO₄ or Bu₄NBr in propylene carbonate or di-Me sulfite. Excellent depolarization is claimed.

IT 7439-93-2, uses and miscellaneous

RL: USES (Uses)

(anodes, in batteries with nonaq. electrolytes and sulfur dioxide cathodic depolarizer)

RN 7439-93-2 HCAPLUS

CN Lithium (CA INDEX NAME)

Li

IC H01M

CC 77 (Electrochemistry)

ST sulfur dioxide cathode depolarizer; cathodes
depolarizing agent; depolarizing agent cathodes

IT Electrolytic depolarizers

(sulfur dioxide as, in batteries with nonaq.
electrolytes)

IT Batteries, secondary

(with sulfur dioxide cathodic depolarizer and
alkali metal anodes)IT 7439-93-2, uses and miscellaneous 7440-23-5, uses and
miscellaneous

RL: USES (Uses)

(anodes, in batteries with nonaq. electrolytes
and sulfur dioxide cathodic depolarizer)

IT 7446-09-5, uses and miscellaneous

RL: USES (Uses)

(cathode depolarizer, in batteries with nonaq.
electrolytes)

=> d l115 ibib abs hitstr hitind 1-29

L115 ANSWER 1 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:810847 HCAPLUS

DOCUMENT NUMBER: 143:214339

TITLE: A nonaqueous electrolyte for
a rechargeable electrochemical cellINVENTOR(S): Vetter, Jens; Novak, Petr; Buqa, Hilmi; Peter,
Sandra

PATENT ASSIGNEE(S): Paul Scherrer Institut, Switz.

SOURCE: Eur. Pat. Appl., 20 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

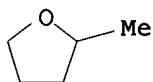
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
EP 1564832	A1	20050817	EP 2004-6038	200403 13
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
WO 2005081355	A1	20050901	WO 2004-EP14405	200412 17
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,				

MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
 SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
 VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
 NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
 GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: EP 2004-3250 A 200402
 13
 EP 2004-6038 A 200403
 13

AB It is the aim of the present invention to retain the benefits of a lithium ion cell capable of operating at temps. down to as low as about -40° while minimizing the permanent cycle capacity loss under the circumstance of establishing the first cycle irreversible capacity loss at a tolerable level. This aim is achieved by a **nonaq. electrolyte** for a rechargeable electrochem. cell, comprising (a) a film forming organic component; (b) an alkali metal salt; and (c) as an additive a nitrogen-containing hetero-aromatic and/or its derivs. and/or mixts. thereof; and/or (d) as an additive a compound selected from a group containing aniline, pyrrole, 2-methyl-1-pyrroline, 1-methylpyrroline and 1-vinyle-2-pyrrolidine. Surprisingly, these additives have the properties of supporting the immediate generation of superior solid electrolyte interphases on the carbon/graphite anode in order to suppress its exfoliation when propylene carbonate is used as a main organic compound. Depending on the choice for the anode material which significantly has an impact on the irreversible first cycle capacity loss, an electrochem. cell equipped with this electrolyte maintains its capacity over a comparably high number of charge/discharge cycles with capacity losses far below 0.5% per cycle.

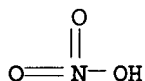
IT 96-47-9, 2-Methyltetrahydrofuran 110-71-4,
 1,2-Dimethoxyethane 7790-69-4, Lithium nitrate
 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for rechargeable
 electrochem. cell)
 RN 96-47-9 HCAPLUS
 CN Furan, tetrahydro-2-methyl- (CA INDEX NAME)



RN 110-71-4 HCAPLUS
 CN Ethane, 1,2-dimethoxy- (CA INDEX NAME)

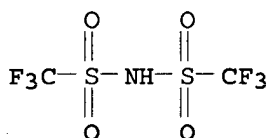
MeO-CH₂-CH₂-OMe

RN 7790-69-4 HCAPLUS
 CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)

● Li

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **nonaq electrolyte** rechargeable lithium battery

IT Secondary batteries

(lithium; **nonaq. electrolyte** for rechargeable
electrochem. cell)

IT Heterocyclic compounds

RL: MOA (Modifier or additive use); USES (Uses)
(nitrogen, aromatic; **nonaq. electrolyte** for
rechargeable electrochem. cell)

IT Battery electrolytes

(nonaq. electrolyte for rechargeable
electrochem. cell)

IT Alkali metal salts

RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte for rechargeable
electrochem. cell)

IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0,
 γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,
 Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4
 , 1,2-Dimethoxyethane 547-64-8, Methyl lactate 554-12-1, Methyl
 propionate 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl
 carbonate 623-53-0, Ethyl methyl carbonate 2923-17-3, Lithium
 trifluoroacetate 2923-20-8, Lithium perfluoroethanesulfonate
 4437-85-8, Butylene carbonate 4824-75-3, Butyl methyl carbonate
 7439-93-2, Lithium, uses 7439-93-2D, Lithium, fluoroalkylphosphate
 7439-93-2D, Lithium, organo-borates 7782-42-5, Graphite, uses
 7790-69-4, Lithium nitrate 7791-03-9, Lithium perchlorate
 12190-79-3, Cobalt lithium oxide (CoLiO₂) 13453-75-3, Lithium
 fluorosulfonate 14024-11-4, Lithium tetrachloroaluminate
 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium
 tetraphenylborate 15955-98-3, Lithium tetrachlorogallate
 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium

hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
 33454-82-9, Lithium triflate 56525-42-9, Methyl propyl carbonate,
 uses 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imid
 e 115028-88-1 244761-29-3, Lithium bis(oxalato)borate
 RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte for rechargeable
 electrochem. cell)

IT 62-53-3, Aniline, uses 88-12-0, 1-Vinyl-2-pyrrolidinone, uses
 100-43-6, 4-Vinylpyridine 100-69-6, 2-Vinylpyridine 108-89-4,
 4-Picoline 108-99-6, 3-Picoline 109-06-8, 2-Picoline 109-97-7,
 Pyrrole 110-86-1, Pyridine, uses 110-86-1D, Pyridine, 2-alkyl
 derivative 110-86-1D, Pyridine, 3-alkyl derivative 110-86-1D, Pyridine,
 4-alkyl derivative 120-94-5, 1-Methylpyrrolidine 872-32-2,
 2-Methyl-1-pyrroline 57951-36-7, Dimethylaminopyridine
 RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte for rechargeable
 electrochem. cell)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L115 ANSWER 2 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:673529 HCAPLUS

DOCUMENT NUMBER: 143:176219

TITLE: Methods of charging lithium sulfur battery cells

INVENTOR(S): Mikhaylik, Yuriy V.

PATENT ASSIGNEE(S): Moltech Corporation, USA; Sion Power of
 Corporation

SOURCE: PCT Int. Appl., 37 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005069405	A2	20050728	WO 2005-US495	20050106
WO 2005069405	A3	20060817		
W:				
AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,				
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,				
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,				
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,				
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,				
SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,				
VC, VN, YU, ZA, ZM, ZW, SM				
RW:				
BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,				
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,				
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,				
NL, PL, PT, RO, SE, SI, SK, TR, BE, BJ, CF, CG, CI, CM, GA,				
GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2552645	A1	20050728	CA 2005-2552645	20050106
EP 1714339	A2	20061025	EP 2005-705255	20050106

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,
 PL, SK, BA, HR, IS, YU

CN 1930711 A 20070314 CN 2005-80006966

200501
 06

PRIORITY APPLN. INFO.:

US 2004-753123

A

200401
 06

WO 2005-US495

W

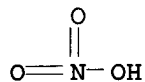
200501
 06

AB A method of charging a lithium-sulfur electrochem. cell is described wherein the lithium-sulfur cell comprises a cathode comprising an electroactive sulfur-containing material, an anode comprising lithium, and a **nonaq. electrolyte**. The cells, which deliver a high percentage of the theor. discharge capacity, exhibit a high charge-discharge efficiency and/or show low self-discharge rates, contain electrolytes with ≥ 1 N-O compound in a concentration of about 0.02M to about 2.0M.

IT 6484-52-2, Ammonium nitrate, uses 7757-79-1, Potassium nitrate, uses 7758-09-0, Potassium nitrite 7789-18-6, Cesium nitrate 7790-69-4, Lithium nitrate 10022-31-8, Barium nitrate 90076-65-6
 RL: TEM (Technical or engineered material use); USES (Uses) (lithium-sulfur battery with improved discharge capacity and high charge-discharge efficiency with **electrolyte** containing nitrogen-oxygen compound)

RN 6484-52-2 HCAPLUS

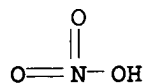
CN Nitric acid ammonium salt (1:1) (CA INDEX NAME)



● NH₃

RN 7757-79-1 HCAPLUS

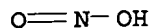
CN Nitric acid potassium salt (1:1) (CA INDEX NAME)



● K

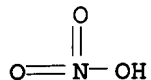
RN 7758-09-0 HCAPLUS

CN Nitrous acid, potassium salt (8CI, 9CI) (CA INDEX NAME)



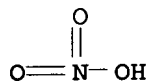
● K

RN 7789-18-6 HCAPLUS
CN Nitric acid, cesium salt (1:1) (CA INDEX NAME)



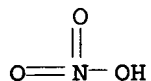
● Cs

RN 7790-69-4 HCAPLUS
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



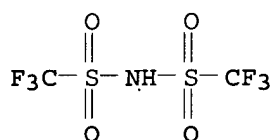
● Li

RN 10022-31-8 HCAPLUS
CN Nitric acid, barium salt (2:1) (CA INDEX NAME)



● 1/2 Ba

RN 90076-65-6 HCAPLUS
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 75-52-5, Nitromethane, uses 98-95-3, Nitrobenzene, uses
 108-03-2, 1-Nitropropane 506-93-4, Guanidine nitrate 543-53-3,
 Pyridinium nitrate 556-65-0, Lithium thiocyanate 610-39-9,
 3,4-Dinitrotoluene 1321-12-6, Nitrotoluene 2564-83-2, Tempo
 6484-52-2, Ammonium nitrate, uses 7757-79-1,
 Potassium nitrate, uses 7758-09-0, Potassium nitrite
 7789-18-6, Cesium nitrate 7790-69-4, Lithium
 nitrate 10022-31-8, Barium nitrate 25154-54-5,
 DiNitrobenzene 33454-82-9, Lithium triflate 52006-62-9,
 Nitrobutane 56778-64-4, Nitropyridine 90076-65-6
 143314-14-1, 1-Ethyl-3-methylimidazolium nitrate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (lithium-sulfur battery with improved discharge capacity and high
 charge-discharge efficiency with electrolyte containing
 nitrogen-oxygen compound)

L115 ANSWER 3 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:588319 HCAPLUS
 DOCUMENT NUMBER: 143:100355
 TITLE: Electrolytes for lithium sulfur batteries
 INVENTOR(S): Mikhaylik, Yuriy V.
 PATENT ASSIGNEE(S): Moltech Corp., USA
 SOURCE: U.S. Pat. Appl. Publ., 18 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005147891	A1	20050707	US 2004-752876	20040106
CA 2552563	A1	20050728	CA 2005-2552563	20050106
WO 2005069404	A2	20050728	WO 2005-US493	20050106
WO 2005069404	A3	20060615		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,

MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
 SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
 VC, VN, YU, ZA, ZM, ZW, SM
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
 NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
 GN, GQ, GW, ML, MR, NE, SN, TD, TG
 EP 1726052 A2 20061129 EP 2005-705253

200501
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R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,
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 AL, BA, HR, LV, MK, YU
 CN 1930710 A 20070314 CN 2005-80006959

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PRIORITY APPLN. INFO.:

US 2004-752876

A

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WO 2005-US493

W

200501
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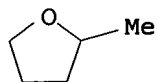
AB Disclosed is an additive for an electrochem. cell wherein the
 additive includes an N-O bond. The additive is most preferably
 included in a **nonaq. electrolyte** of the cell.
 Also disclosed are cells and batteries including the additive, and
 methods of charging the batteries and cells. An electrochem. cell
 including the additive preferably has an anode that includes lithium
 and a cathode including an electroactive sulfur-containing material.

IT 96-47-9, 2-Methyltetrahydrofuran 109-87-5,
 Dimethoxymethane 109-99-9, Thf, uses 110-71-4
 111-96-6, Diethylene glycol dimethyl ether 112-49-2
 , Triethylene glycol dimethyl ether 123-91-1, 1,4-Dioxane,
 uses 142-68-7, Tetrahydropyran 143-24-8,
 Tetraethylene glycol dimethyl ether 149-73-5,
 Trimethoxymethane 646-06-0, 1,3-Dioxolane
 17081-21-9, 1,3-Dimethoxypropane 73506-93-1,
 Diethoxyethane 90076-65-6 111109-77-4,
 Dipropylene glycol dimethyl ether

RL: DEV (Device component use); USES (Uses)
 (**electrolytes** for lithium sulfur batteries)

RN 96-47-9 HCAPLUS

CN Furan, tetrahydro-2-methyl- (CA INDEX NAME)



RN 109-87-5 HCAPLUS

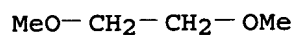
CN Methane, dimethoxy- (CA INDEX NAME)



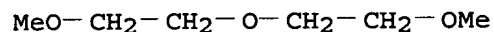
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CN Furan, tetrahydro- (CA INDEX NAME)



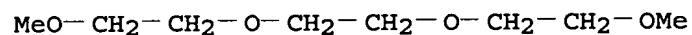
RN 110-71-4 HCAPLUS
CN Ethane, 1,2-dimethoxy- (CA INDEX NAME)



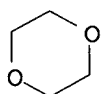
RN 111-96-6 HCAPLUS
CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



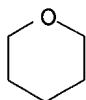
RN 112-49-2 HCAPLUS
CN 2,5,8,11-Tetraoxadodecane (CA INDEX NAME)



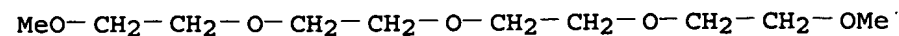
RN 123-91-1 HCAPLUS
CN 1,4-Dioxane (CA INDEX NAME)



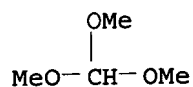
RN 142-68-7 HCAPLUS
CN 2H-Pyran, tetrahydro- (CA INDEX NAME)



RN 143-24-8 HCAPLUS
CN 2,5,8,11,14-Pentaoxapentadecane (CA INDEX NAME)



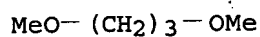
RN 149-73-5 HCAPLUS
CN Methane, trimethoxy- (CA INDEX NAME)



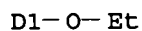
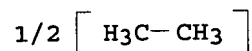
RN 646-06-0 HCAPLUS
CN 1,3-Dioxolane (CA INDEX NAME)



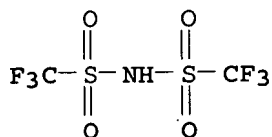
RN 17081-21-9 HCAPLUS
CN Propane, 1,3-dimethoxy- (CA INDEX NAME)



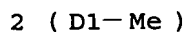
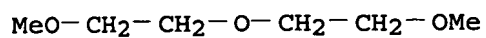
RN 73506-93-1 HCAPLUS
CN Ethane, diethoxy- (9CI) (CA INDEX NAME)



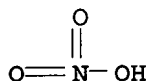
RN 90076-65-6 HCAPLUS
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



RN 111109-77-4 HCAPLUS
CN Propane, oxybis[methoxy- (9CI) (CA INDEX NAME)

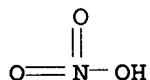


IT 6484-52-2, Ammonium nitrate, uses 7757-79-1,
Potassium nitrate, uses 7758-09-0, Potassium nitrite
7789-18-6, Cesium nitrate 7790-69-4, Lithium
nitrate 10022-31-8, Barium nitrate 13446-48-5,
Ammonium nitrite 13454-83-6, Cesium nitrite
13568-33-7, Lithium nitrite
RL: MOA (Modifier or additive use); USES (Uses)
(electrolytes for lithium sulfur batteries)
RN 6484-52-2 HCAPLUS
CN Nitric acid ammonium salt (1:1) (CA INDEX NAME)



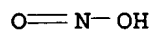
● NH₃

RN 7757-79-1 HCAPLUS
CN Nitric acid potassium salt (1:1) (CA INDEX NAME)



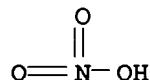
● K

RN 7758-09-0 HCAPLUS
CN Nitrous acid, potassium salt (8CI, 9CI) (CA INDEX NAME)



● K

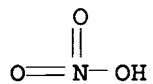
RN 7789-18-6 HCAPLUS
CN Nitric acid, cesium salt (1:1) (CA INDEX NAME)



● Cs

RN 7790-69-4 HCAPLUS

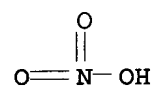
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 10022-31-8 HCAPLUS

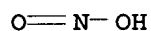
CN Nitric acid, barium salt (2:1) (CA INDEX NAME)



● 1/2 Ba

RN 13446-48-5 HCAPLUS

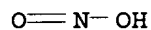
CN Nitrous acid, ammonium salt (8CI, 9CI) (CA INDEX NAME)



● NH₃

RN 13454-83-6 HCAPLUS

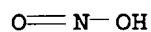
CN Nitrous acid, cesium salt (8CI, 9CI) (CA INDEX NAME)



● Cs

RN 13568-33-7 HCAPLUS

CN Nitrous acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40

ICS H01M004-58

INCL 429326000; 429339000; 429218100; 429231950; 429329000; 429340000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 96-47-9, 2-Methyltetrahydrofuran 109-87-5,
 Dimethoxymethane 109-99-9, Thf, uses 110-71-4
 111-96-6, Diethylene glycol dimethyl ether 112-49-2
 , Triethylene glycol dimethyl ether 123-91-1, 1,4-Dioxane,
 uses 142-68-7, Tetrahydropyran 143-24-8,
 Tetraethylene glycol dimethyl ether 149-73-5,
 Trimethoxymethane 505-22-6, 1,3-Dioxane 556-65-0, Lithium
 thiocyanate 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium,
 uses 7439-93-2D, Lithium, salt 7704-34-9, Sulfur, uses
 17081-21-9, 1,3-Dimethoxypropane 33454-82-9, Lithium
 triflate 73506-93-1, Diethoxyethane 90076-65-6
 111109-77-4, Dipropylene glycol dimethyl ether
 RL: DEV (Device component use); USES (Uses)
 (electrolytes for lithium sulfur batteries)
 IT 75-52-5, Nitromethane, uses 77-79-2, 3-Sulfolene 98-95-3,
 Nitrobenzene, uses 108-03-2, 1-Nitropropane 126-33-0, Sulfolane
 506-93-4, Guanidinium nitrate 610-39-9, 3,4-Dinitrotoluene
 872-93-5, 3-MethylSulfolane 1321-12-6; Nitrotoluene 2564-83-2,
 Tempo 6484-52-2, Ammonium nitrate, uses 7757-79-1
 , Potassium nitrate, uses 7758-09-0, Potassium nitrite
 7789-18-6, Cesium nitrate 7790-69-4, Lithium
 nitrate 10022-31-8, Barium nitrate 13446-48-5,
 Ammonium nitrite 13454-83-6, Cesium nitrite
 13568-33-7, Lithium nitrite 25154-54-5, DiNitrobenzene
 25321-14-6, DiNitrotoluene 25322-01-4, Nitropropane 56778-64-4,
 Nitropyridine 143314-14-1, 1-Ethyl-3-methylimidazolium nitrate
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes for lithium sulfur batteries)

L115 ANSWER 4 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:181163 HCAPLUS

DOCUMENT NUMBER: 142:264364

TITLE: Method of preparation of anode active material
 for nonaqueous electrolyte
 battery

INVENTOR(S): Kim, Sung-Soo; Sheem, Kyou-Yoon; Lee, Sang-Min;
 Kim, Sang-Jin; Kim, Joon-Sup; Jung, Bok-Hwan;
 Jeong, Goo-Jin

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: Eur. Pat. Appl., 37 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 1511101	A2	20050302	EP 2004-90319	200408 19
EP 1511101	A3	20061213		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
KR 2005075888	A	20050725	KR 2004-3260	200401

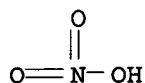
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KR 2005077080	A	20050801	KR 2004-4668	200401
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US 2005079417	A1	20050414	US 2004-921358	200408
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CN 1607687	A	20050420	CN 2004-10098125	200408
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JP 2005072008	A	20050317	JP 2004-242992	200408
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PRIORITY APPLN. INFO.:			KR 2003-57926	A
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				200401
				16
			KR 2004-4667	A
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			KR 2004-4668	A
				200401
				26

AB A neg. active material of a **non-aqueous electrolyte** battery includes a compound represented by the following formula: $\text{Li}_x\text{MyV}_z\text{O}_{2+d}$ where $0.1 \leq x \leq 2.5$, $0 < y \leq 0.5$, $0.5 \leq z \leq 1.5$, $0 \leq d \leq 0.5$, and M is at least one element selected from the group consisting of Al, Cr, Mo, Ti, W, and Zr.

IT 7790-69-4, Lithium nitrate
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (method of preparation of anode active material for **nonaq. electrolyte** battery)

RN 7790-69-4 HCAPLUS

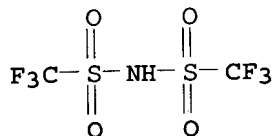
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (method of preparation of anode active material for **nonaq. electrolyte** battery)

RN 90076-65-6 HCAPLUS
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
 lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-48
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 49
 ST anode active material prepn **nonaq electrolyte**
 battery
 IT Intercalation
 (electrochem.; method of preparation of anode active material for
nonaq. electrolyte battery)
 IT Secondary batteries
 (lithium; method of preparation of anode active material for
nonaq. electrolyte battery)
 IT Battery anodes
 (method of preparation of anode active material for **nonaq.**
electrolyte battery)
 IT 546-89-4, Lithium acetate 1310-65-2, Lithium hydroxide
 1314-23-4, Zirconium oxide, processes 1314-34-7, Vanadium oxide
 (V2O3) 1314-35-8, Tungsten oxide, processes 1344-28-1, Aluminum
 oxide, processes 7790-69-4, Lithium nitrate 7803-55-6,
 Ammonium vanadate 11098-99-0, Molybdenum oxide 11118-57-3,
 Chromium oxide 12035-98-2, Vanadium oxide (VO) 12037-05-7,
 Vanadium oxide (V4O7) 12440-03-8 12626-43-6, Chromium hydroxide
 12651-23-9, Titanium hydroxide 13463-67-7, Titanium oxide,
 processes 14475-63-9, Zirconium hydroxide 21645-51-2, Aluminum
 hydroxide, processes 107477-35-0, Tungsten hydroxide
 126853-99-4, Molybdenum hydroxide 191404-47-4, Vanadium oxide
 (V2O4)
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (method of preparation of anode active material for **nonaq.**
electrolyte battery)
 IT 7429-90-5, Aluminum, uses 7439-98-7, Molybdenum, uses 7440-33-7,
 Tungsten, uses 7440-47-3, Chromium, uses 7440-67-7, Zirconium,
 uses 7447-41-8, Lithium chloride, uses 7791-03-9, Lithium
 perchlorate 10377-51-2, Lithium iodide 14024-11-4, Lithium
 tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate
 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium
 hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
 33454-82-9, Lithium triflate 90076-65-6 131651-65-5,
 Lithium nonafluorobutanesulfonate 132404-42-3
 RL: DEV (Device component use); USES (Uses)
 (method of preparation of anode active material for **nonaq.**
electrolyte battery)
 IT 846058-40-0P, Lithium molybdenum vanadium oxide (Li1.1Mo0.01V0.89O2)
 846058-41-1P, Lithium molybdenum vanadium oxide (Li1.1Mo0.03V0.87O2)

846058-42-2P, Lithium molybdenum vanadium oxide (Li1.1Mo0.05V0.85O2)
 846058-43-3P, Lithium titanium vanadium oxide (Li1.1Ti0.01V0.89O2)
 846058-44-4P, Lithium titanium vanadium oxide (Li1.1Ti0.03V0.87O2)
 846058-45-5P, Lithium titanium vanadium oxide (Li1.1Ti0.05V0.85O2)
 846058-46-6P, Lithium tungsten vanadium oxide (Li1.08W0.05V0.85O2)
 846058-47-7P, Lithium molybdenum vanadium oxide
 (Li1.08Mo0.05V0.85O2) 846058-48-8P, Lithium molybdenum vanadium
 oxide (Li1.08Mo0.02V0.902) 846058-50-2P, Lithium titanium vanadium
 oxide (Li1.08Ti0.02V0.902) 846058-52-4P, Lithium titanium vanadium
 oxide (Li1.08Ti0.05V0.85O2) 846058-53-5P, Lithium titanium
 vanadium oxide (Li1.08Ti0.03V0.85O2) 846058-56-8P, Lithium
 titanium vanadium oxide (Li1.08Ti0.2V0.902)

RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)

(method of preparation of anode active material for **nonaq.**
electrolyte battery)

IT 7782-42-5, Graphite, uses

RL: MOA (Modifier or additive use); USES (Uses)

(method of preparation of anode active material for **nonaq.**
electrolyte battery)

IT 124-38-9, Carbon dioxide, uses 630-08-0, Carbon monoxide, uses
 1333-74-0, Hydrogen, uses 7440-37-1, Argon, uses 7440-59-7,
 Helium, uses 7727-37-9, Nitrogen, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(method of preparation of anode active material for **nonaq.**
electrolyte battery)

L115 ANSWER 5 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:532203 HCAPLUS

DOCUMENT NUMBER: 139:87845

TITLE: Organic carbonate additives for
nonaqueous electrolyte
 rechargeable electrochemical cells

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.; Rubino, Robert

PATENT ASSIGNEE(S): Wilson Greatbatch Technologies, Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 16 pp., Cont.-in-part of
 U.S. Ser. No. 738143.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2003129500	A1	20030710	US 2002-235405	200209 05
US 6759170	B2	20040706		
US 2001004507	A1	20010621	US 2000-738143	200012 15
PRIORITY APPLN. INFO.:			US 1998-105280P	P 199810 22
			US 1999-302773	B2 199904 30

US 2000-738143

A2

200012

15

OTHER SOURCE(S): MARPAT 139:87845

AB A lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, is disclosed. The stated benefits are realized by the addition of at least one carbonate additive to an electrolyte comprising an alkali metal salt dissolved in a solvent mixture including ethylene carbonate, di-Me carbonate, Et Me carbonate and di-Et carbonate. The preferred additive is either a linear or cyclic carbonate containing covalent O-X and O-Y bonds on opposite sides of a carbonyl group wherein at least one of the O-X and the O-Y bonds has a dissociation energy less than about 80 kcal/mol.

IT 7790-69-4, Lithium nitrate 90076-65-6

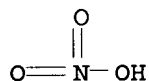
RL: DEV (Device component use); USES (Uses)

(organic carbonate additives for nonaq.

electrolyte rechargeable electrochem. cells)

RN 7790-69-4 HCAPLUS

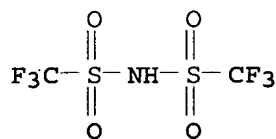
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40

ICS H01M004-48; H01M004-58; H01M004-50; H01M004-52; H01M004-62

INCL 429332000; 429331000; 429339000; 429231800; 429231100; 429231950; 429231200; 429220000; 429231500; 429221000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

IT Secondary batteries

(lithium; organic carbonate additives for nonaq.

electrolyte rechargeable electrochem. cells)

IT Carbon black, uses

Carbon fibers, uses

Carbonaceous materials (technological products)

Coke

RL: DEV (Device component use); USES (Uses)

(organic carbonate additives for **nonaq.**

electrolyte rechargeable electrochem. cells)

IT Fluoropolymers, uses

RL: MOA (Modifier or additive use); USES (Uses)

(organic carbonate additives for **nonaq.**

electrolyte rechargeable electrochem. cells)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)

(glassy; organic carbonate additives for **nonaq.**

electrolyte rechargeable electrochem. cells)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate
623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate
2923-17-3, 2923-20-8, 4437-85-8, Butylene carbonate 7439-93-2,
Lithium, uses 7782-42-5, Graphite, uses 7790-69-4,
Lithium nitrate 7791-03-9, Lithium perchlorate 11113-67-0, Iron
lithium oxide 11126-15-1, Lithium vanadium oxide 12031-63-9,
Lithium niobium oxide (LiNbO3) 12190-79-3, Cobalt lithium oxide
colio2 12680-08-9, Lithium titanium sulfide 13453-75-3, Lithium
fluorosulfonate 14024-11-4, Lithium tetrachloroaluminate
14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium
tetraphenylborate 15955-98-3, Lithium tetrachlorogallate
18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 37296-91-6, Lithium molybdenum oxide
37367-96-7, Lithium molybdenum sulfide 39300-70-4, Lithium nickel
oxide 39302-37-9, Lithium titanium oxide 39457-42-6, Lithium
manganese oxide 51177-06-1, Chromium lithium oxide 52627-24-4,
Cobalt lithium oxide 56321-19-8, Lithium niobium sulfide
61673-65-2, Lithium niobium selenide 61673-69-6, Lithium titanium
selenide 61673-70-9, Lithium titanium telluride 61673-71-0,
Lithium vanadium selenide 74245-06-0, Lithium vanadium sulfide
80341-49-7, Iron lithium sulfide 90076-65-6 96352-80-6,
Lithium molybdenum selenide 96352-81-7, Lithium molybdenum
telluride 103288-79-5, Cobalt lithium sulfide 104708-77-2,
Copper lithium oxide 115028-88-1 132404-42-3 148884-75-7,
Cobalt lithium selenide 264142-74-7, Lithium vanadium telluride
264142-75-8, Chromium lithium sulfide 264142-76-9, Chromium
lithium selenide 264142-77-0, Chromium lithium telluride
264142-78-1, Copper lithium sulfide 264142-79-2, Copper lithium
selenide 264142-80-5, Copper lithium telluride 264142-81-6,
Lithium niobium telluride 264142-82-7, Iron lithium selenide
264142-83-8, Iron lithium telluride 264142-84-9, Lithium nickel
sulfide 264142-85-0, Lithium nickel selenide 264142-86-1,
Lithium nickel telluride 264142-87-2, Cobalt lithium telluride
264142-88-3, Lithium manganese sulfide 264142-89-4, Lithium
manganese selenide 264142-90-7, Lithium manganese telluride

RL: DEV (Device component use); USES (Uses)

(organic carbonate additives for **nonaq.**

electrolyte rechargeable electrochem. cells)

IT 1469-70-1, Allyl ethyl carbonate 3459-92-5, Dibenzyl carbonate
4427-92-3, 4-Phenyl-1,3-dioxolan-2-one 13139-17-8,
Benzyl-(N-succinimidyl) carbonate 15022-08-9, Diallyl carbonate
57772-64-2, 1,5-Bis(succinimidooxycarbonyloxy)pentane 62210-73-5,
N-(Benzyloxycarbonyloxy)-5-norbornene-2,3-dicarboximide
66065-85-8, Succinimidyl-2,2,2-trichloroethyl carbonate
74124-79-1, Bis(N-succinimidyl) carbonate 82911-69-1,

N-(9-Fluorenylmethoxycarbonyloxy)succinimide 88544-01-8
554402-03-8 554402-04-9

RL: MOA (Modifier or additive use); USES (Uses)
(organic carbonate additives for **nonaq.**

electrolyte rechargeable electrochem. cells)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6,
Titanium, uses 12597-68-1, Stainless steel, uses

RL: MOA (Modifier or additive use); USES (Uses)

(powder; organic carbonate additives for **nonaq.**

electrolyte rechargeable electrochem. cells)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L115 ANSWER 6 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:511918 HCAPLUS

DOCUMENT NUMBER: 139:71610

TITLE: **Nonaqueous organic**
electrolytes for low temperature
discharge of rechargeable electrochemical cells
INVENTOR(S): Gan, Hong; Takeuchi, Esther S.; Rubino, Robert
PATENT ASSIGNEE(S): Wilson Greatbatch Technologies, Inc., USA
SOURCE: U.S. Pat. Appl. Publ., 23 pp., Cont.-in-part of
U.S. Ser. No. 669,936.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

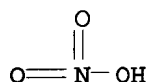
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003124434	A1	20030703	US 2002-232166	20020830
US 6746804	B2	20040608		
US 6153338	A	20001128	US 1998-133799	19980813
PRIORITY APPLN. INFO.:			US 1998-85532P	P 19980513
			US 1998-133799	A2 19980813
			US 2000-669936	A2 20000926

AB An alkali metal secondary electrochem. cell, and preferably a lithium ion cell, activated with an equilibrated quaternary solvent system, is disclosed. The solvent system comprises a mixture of dialkyl carbonates and cyclic carbonates, and preferably a quaternary mixture of di-Me carbonate, di-Et carbonate, ethylmethyl carbonate and ethylene carbonate with di-Me carbonate, di-Et carbonate and ethylmethyl carbonate in an equilibrated molar mixture. Lithium ion cells activated with this electrolyte have good room

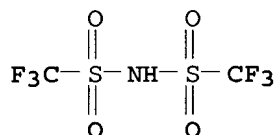
temperature cycling characteristics and excellent low temperature discharge behavior.

IT 7790-69-4, Lithium nitrate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (nonaq. organic electrolytes for low temperature
 discharge of rechargeable electrochem. cells)
 RN 7790-69-4 HCAPLUS
 CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
 lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40
 ICS H01M004-58; H01M004-62
 INCL 429326000; 429342000; 429231100; 429217000; 429232000; 429231950;
 029623100; 429332000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST battery low temp discharge nonaq org electrolyte
 IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (binder; nonaq. organic electrolytes for low
 temperature discharge of rechargeable electrochem. cells)
 IT Secondary batteries
 (lithium; nonaq. organic electrolytes for low
 temperature discharge of rechargeable electrochem. cells)
 IT Battery electrolytes
 (nonaq. organic electrolytes for low temperature
 discharge of rechargeable electrochem. cells)
 IT Carbon black, uses
 Carbon fibers, uses
 Carbonaceous materials (technological products)
 Coke
 RL: DEV (Device component use); USES (Uses)
 (nonaq. organic electrolytes for low temperature
 discharge of rechargeable electrochem. cells)
 IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)

(glassy; **nonaq. organic electrolytes** for low temperature discharge of rechargeable electrochem. cells)

IT 865-34-9, Lithium methoxide
 RL: CAT (Catalyst use); USES (Uses)
 (**nonaq. organic electrolytes** for low temperature discharge of rechargeable electrochem. cells)

IT 7439-93-2, Lithium, uses
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (**nonaq. organic electrolytes** for low temperature discharge of rechargeable electrochem. cells)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
 872-36-6, Vinylene carbonate 2923-17-3 2923-20-8 4437-85-8,
 Butylene carbonate 7782-42-5, Graphite, uses 7790-69-4,
 Lithium nitrate 7791-03-9, Lithium perchlorate 11113-67-0, Iron
 lithium oxide 11126-15-1, Lithium vanadium oxide 12031-63-9,
 Lithium niobium oxide (LiNbO₃) 12680-08-9, Lithium titanium
 sulfide 13453-75-3, Lithium fluoro-sulfonate 14024-11-4, Lithium
 tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate
 14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium
 tetrachlorogallate 33454-82-9, Lithium triflate 37296-91-6,
 Lithium molybdenum oxide 37367-96-7, Lithium molybdenum sulfide
 39300-70-4, Lithium nickel oxide 39302-37-9, Lithium titanium
 oxide 39457-42-6, Lithium manganese oxide 51177-06-1, Chromium
 lithium oxide 52627-24-4, Cobalt lithium oxide 56321-19-8,
 Lithium niobium sulfide 61673-65-2, Lithium niobium selenide
 61673-69-6, Lithium titanium selenide 61673-70-9, Lithium titanium
 telluride 61673-71-0, Lithium vanadium selenide 74245-06-0,
 Lithium vanadium sulfide 80341-49-7, Iron lithium sulfide
 90076-65-6 96352-80-6, Lithium molybdenum selenide
 96352-81-7, Lithium molybdenum telluride 103288-79-5, Cobalt
 lithium sulfide 104708-77-2, Copper lithium oxide 115028-88-1
 132404-42-3, Lithium tris(trifluoromethanesulfonyl)methane
 148884-75-7, Cobalt lithium selenide 264142-74-7, Lithium vanadium
 telluride 264142-75-8, Chromium lithium sulfide 264142-76-9,
 Chromium lithium selenide 264142-77-0, Chromium lithium telluride
 264142-78-1, Copper lithium sulfide 264142-79-2, Copper lithium
 selenide 264142-80-5, Copper lithium telluride 264142-81-6,
 Lithium niobium telluride 264142-82-7, Iron lithium selenide
 264142-83-8, Iron lithium telluride 264142-84-9, Lithium nickel
 sulfide 264142-85-0, Lithium nickel selenide 264142-86-1,
 Lithium nickel telluride 264142-87-2, Cobalt lithium telluride
 264142-88-3, Lithium manganese sulfide 264142-89-4, Lithium
 manganese selenide 264142-90-7, Lithium manganese telluride
 RL: DEV (Device component use); USES (Uses)
 (**nonaq. organic electrolytes** for low temperature discharge of rechargeable electrochem. cells)

IT 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium
 hexafluoroarsenate
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (**nonaq. organic electrolytes** for low temperature discharge of rechargeable electrochem. cells)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6,
 Titanium, uses 12597-68-1, Stainless steel, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (powder; **nonaq. organic electrolytes** for low temperature discharge of rechargeable electrochem. cells)

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L115 ANSWER 7 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:473087 HCAPLUS

DOCUMENT NUMBER: 139:39170

TITLE: Phosphate additives for **nonaqueous**
electrolyte rechargeable electrochemical
cells

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.; Rubino, Robert

PATENT ASSIGNEE(S): Wilson Greatbatch Technologies, Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 11 pp., Cont.-in-part of
U.S. -723,059.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

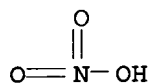
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2003113635	A1	20030619	US 2002-251137	200209 20
US 6919141	B2	20050719		
US 6203942	B1	20010320	US 1999-303877	199905 03
PRIORITY APPLN. INFO.:			US 1998-105279P	P 199810 22
			US 1999-303877	A2 199905 03
			US 2000-723059	A2 200011 27

AB A lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, is disclosed. The stated benefits are realized by the addition of at least one phosphate additive having the formula: (R1O)P(=O)(OR2)(OR3) and wherein R1, R2 and R3 are the same or different, wherein at least one, but not all three, of the R groups is hydrogen, or at least one of the R groups has at least 3 carbon atoms and contains an sp or sp2 hybridized carbon atom bonded to an sp3 hybridized carbon atom bonded to the oxygen atom bonded to the phosphorous atom.

IT 7790-69-4, Lithium nitrate 90076-65-6
RL: DEV (Device component use); USES (Uses)
(phosphate additives for **nonaq. electrolyte**
rechargeable electrochem. cells)

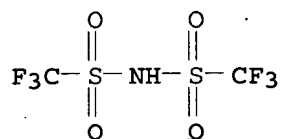
RN 7790-69-4 HCAPLUS

CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40
 INCL 429326000; 429342000; 429330000; 429231800; 429217000; 429232000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST phosphate additive **nonaq electrolyte**
 rechargeable battery
 IT Secondary batteries
 (lithium; phosphate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)
 IT Battery **electrolytes**
 Secondary batteries
 (phosphate additives for **nonaq. electrolyte**
 rechargeable electrochem. cells)
 IT Carbon black, uses
 Carbon fibers, uses
 Coke
 RL: DEV (Device component use); USES (Uses)
 (phosphate additives for **nonaq. electrolyte**
 rechargeable electrochem. cells)
 IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (phosphate additives for **nonaq. electrolyte**
 rechargeable electrochem. cells)
 IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (glassy; phosphate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 556-65-0, Lithium thiocyanate 872-36-6, Vinylene carbonate
 2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 7439-93-2,
 Lithium, uses 7782-42-5, Graphite, uses 7790-69-4,
 Lithium nitrate 7791-03-9, Lithium perchlorate 11113-67-0, Iron
 lithium oxide 11126-15-1, Lithium vanadium oxide 12031-63-9,
 Lithium niobium oxide (LiNbO₃) 12680-08-9, Lithium titanium
 sulfide 13453-75-3, Lithium fluorosulfate 14024-11-4, Lithium
 tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate

14485-20-2, Lithium tetraphenyl borate 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 37296-91-6, Lithium molybdenum oxide 37367-96-7, Lithium molybdenum sulfide 39300-70-4, Lithium nickel oxide 39302-37-9, Lithium titanium oxide 39457-42-6, Lithium manganese oxide 51177-06-1, Chromium lithium oxide 52627-24-4, Cobalt lithium oxide 56321-19-8, Lithium niobium sulfide 61673-65-2, Lithium niobium selenide 61673-69-6, Lithium titanium selenide 61673-70-9, Lithium titanium telluride 61673-71-0, Lithium vanadium selenide 74245-06-0, Lithium vanadium sulfide 80341-49-7, Iron lithium sulfide 90076-65-6 96352-80-6, Lithium molybdenum selenide 96352-81-7, Lithium molybdenum telluride 103288-79-5, Cobalt lithium sulfide 104708-77-2, Copper lithium oxide 115028-88-1 132404-42-3 148884-75-7, Cobalt lithium selenide 264142-74-7, Lithium vanadium telluride 264142-75-8, Chromium lithium sulfide 264142-76-9, Chromium lithium selenide 264142-77-0, Chromium lithium telluride 264142-78-1, Copper lithium sulfide 264142-79-2, Copper lithium selenide 264142-80-5, Copper lithium telluride 264142-81-6, Lithium niobium telluride 264142-82-7, Iron lithium selenide 264142-83-8, Iron lithium telluride 264142-84-9, Lithium nickel sulfide 264142-85-0, Lithium nickel selenide 264142-86-1, Lithium nickel telluride 264142-87-2, Cobalt lithium telluride 264142-88-3, Lithium manganese sulfide 264142-89-4, Lithium manganese selenide 264142-90-7, Lithium manganese telluride

RL: DEV (Device component use); USES (Uses)

(phosphate additives for **nonaq. electrolyte** rechargeable electrochem. cells)

IT 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 1623-07-0, Benzyl phosphate 1623-08-1, Dibenzyl phosphate 1623-10-5, Diallyl methyl phosphate 1623-11-6, Allyl dimethyl phosphate 1623-19-4, Triallyl phosphate 1707-92-2, Tribenzyl phosphate 1779-34-6, TriPropargyl phosphate 7748-09-6, Diallyl phosphate 25022-72-4, Allyl phosphate 26292-51-3, Phosphoric acid, methyl bis(phenylmethyl) ester 35363-40-7, Ethyl propyl carbonate, uses 55343-62-9, Propargyl phosphate 56379-74-9 56525-42-9, Methyl propyl carbonate, uses 67293-73-6, Benzyl methyl phosphate 433979-69-2, Phosphoric acid, dimethyl nitromethyl ester 433979-70-5, Dipropargyl phosphate 433979-71-6, Phosphoric acid, cyanomethyl dimethyl ester 433979-72-7, Phosphoric acid, bis(cyanomethyl) methyl ester

RL: MOA (Modifier or additive use); USES (Uses)

(phosphate additives for **nonaq. electrolyte** rechargeable electrochem. cells)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6, Titanium, uses 12597-68-1, Stainless steel, uses

RL: MOA (Modifier or additive use); USES (Uses)

(powder; phosphate additives for **nonaq. electrolyte** rechargeable electrochem. cells)

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L115 ANSWER 8 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:693421 HCAPLUS

DOCUMENT NUMBER: 137:235207

TITLE: Secondary lithium battery with

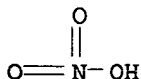
nonaqueous electrolyte
 solution
 INVENTOR(S): Tachibana, Kazuhiro; Nishina, Tatsuo; Endo,
 Takashi; Sato, Yukihiro; Fujiwara, Toru; Suzuki,
 Tomonori
 PATENT ASSIGNEE(S): Japan Science and Technology Corporation, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002260728	A	20020913	JP 2001-51689	200102 27
PRIORITY APPLN. INFO.:			JP 2001-51689	200102 27

AB The battery has a Li containing oxide cathode active mass, a Li salt
 main electrolyte having a F containing anion, a metal cathode having a
 passivation surface layer, and an O supplying auxiliary electrolyte.
 The auxiliary electrolyte contains H₂O and an oxyacid Li salt
 selected from LiNO₃, LiClO₃, LiIO₃, Li₂CO₃, Li₂SiO₃, and LiOH; the
 cathode collector is selected from Al, Ta, Ti, Hf, Zr, Zn, W, Bi,
 Sb, their alloys, and stainless steel; and the main electrolyte can
 be an organic or inorg. F containing Li salt.
 IT 110-71-4, 1,2-Dimethoxyethane
 RL: DEV (Device component use); USES (Uses)
 (comps. of electrolyte solns. containing water and oxygen
 containing lithium compds. for secondary lithium batteries)
 RN 110-71-4 HCAPLUS
 CN Ethane, 1,2-dimethoxy- (CA INDEX NAME)

MeO-CH₂-CH₂-OMe

IT 7790-69-4, Lithium nitrate
 RL: MOA (Modifier or additive use); USES (Uses)
 (comps. of electrolyte solns. containing water and oxygen
 containing lithium compds. for secondary lithium batteries)
 RN 7790-69-4 HCAPLUS
 CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40

ICS H01M004-66
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 108-32-7, Propylene carbonate 110-71-4,
 1,2-Dimethoxyethane 14283-07-9, Lithium fluoroborate 21324-40-3,
 Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (comps. of **electrolyte** solns. containing water and oxygen
 containing lithium compds. for secondary lithium batteries)
 IT 554-13-2, Lithium carbonate 7732-18-5, Water, uses
 7790-69-4, Lithium nitrate 12627-14-4, Lithium silicate
 13453-71-9, Lithium chlorate 13765-03-2, Lithium iodate
 RL: MOA (Modifier or additive use); USES (Uses)
 (comps. of **electrolyte** solns. containing water and oxygen
 containing lithium compds. for secondary lithium batteries)

L115 ANSWER 9 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:540172 HCAPLUS
 DOCUMENT NUMBER: 137:111688
 TITLE: Electrochemical cell having an electrode with a
 nitrite additive in the electrode active mixture
 INVENTOR(S): Gan, Hong; Takeuchi, Esther S.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 8 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002094480	A1	20020718	US 2001-765266	20010118
US 6528207	B2	20030304	US 2001-765266	20010118

PRIORITY APPLN. INFO.:

OTHER SOURCE(S): MARPAT 137:111688

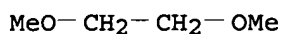
AB Electrode-active materials for primary or secondary lithium
 batteries are fabricated in a method that includes mixing the active
 electrode material with a nitrite ester prior to contact of the
 active material with its current collector. The resulting electrode
 couple is activated by a **non-aqueous**
electrolyte (especially containing Li salts) which dissolves the
 nitrite ester. The unsatd. nitrite ester has the general structure
 (RO)N(:O), in which R is C1-10-saturated hydrocarbyl or heteroatom
 group, or C2-10-unsatd. hydrocarbyl or heteroatom group. Suitable
 nitrite esters include Me nitrite, Et nitrite, Pr nitrite, iso-Pr
 nitrite, Bu nitrite, tert-Bu nitrite, iso-Bu nitrite, benzyl
 nitrite, and Ph nitrite. The nitrite ester is present in the anode
 and cathode active materials at a 0.05-5.0 weight% level.
 IT 109-99-9, Tetrahydrofuran, uses 110-71-4,
 1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2,
 Triglyme 143-24-8, Tetraglyme 7790-69-4, Lithium
 nitrate 90076-65-6, Methanesulfonamide,
 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt
 RL: DEV (Device component use); USES (Uses)

(nonaq. battery electrolytes containing;
electrode-active materials for primary or secondary lithium
batteries containing unsatd. nitrite ester additives)

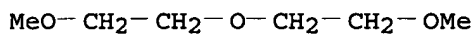
RN 109-99-9 HCAPLUS
CN Furan, tetrahydro- (CA INDEX NAME)



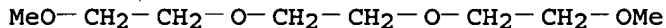
RN 110-71-4 HCAPLUS
CN Ethane, 1,2-dimethoxy- (CA INDEX NAME)



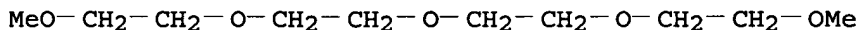
RN 111-96-6 HCAPLUS
CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



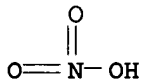
RN 112-49-2 HCAPLUS
CN 2,5,8,11-Tetraoxadodecane (CA INDEX NAME)



RN 143-24-8 HCAPLUS
CN 2,5,8,11,14-Pentaoxapentadecane (CA INDEX NAME)

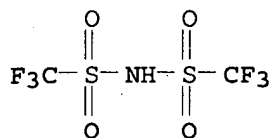


RN 7790-69-4 HCAPLUS
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-62
ICS H01M004-54; H01M004-52; H01M004-58; H01M004-50; H01M004-40;
H01M010-40

INCL 429212000; X42-921.9; X42-923.2; X42-923.15; X42-922.4; X42-922.3;
X42-922.1; X42-922.0; X42-921.7; X42-934.1

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrode unsatd nitrite ester additive; cathode anode
battery unsatd nitrite ester additive; **electrolyte**
nonaq lithium battery nitrite ester additive

IT Lactams
Lactones
RL: DEV (Device component use); USES (Uses)
(**nonaq.** battery **electrolytes** containing;
electrode-active materials for primary or secondary lithium
batteries containing unsatd. nitrite ester additives)

IT Battery **electrolytes**
(**nonaq.**; electrode-active materials for primary or
secondary lithium batteries containing unsatd. nitrite ester
additives)

IT 109-95-5, Ethyl nitrite 540-80-7, tert-Butyl nitrite 541-42-4,
Isopropyl nitrite 542-56-3, Isobutyl nitrite 543-67-9, Propyl
nitrite 544-16-1, Butyl nitrite 624-91-9, Methyl nitrite
935-05-7, Benzyl nitrite 7782-77-6D, Nitrous acid, esters
34207-39-1, Nitrous acid, phenyl ester
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(**nonaq.** battery **electrolyte** containing;
electrode-active materials for primary or secondary lithium
batteries containing unsatd. nitrite ester additives)

IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Dimethyl formamide,
uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate
96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
105-58-8, Diethyl carbonate 108-20-3, Diisopropyl ether
108-29-2, γ -Valerolactone 108-32-7, Propylene carbonate
109-99-9, Tetrahydrofuran, uses 110-71-4,
1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2,
Triglyme 127-19-5, Dimethyl acetamide 143-24-8,
Tetraglyme 463-79-6D, Carbonic acid, dialkyl esters 556-65-0,
Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl
methyl carbonate 623-96-1, Dipropyl carbonate 629-14-1,
1,2-Diethoxyethane 872-50-4, N-Methylpyrrolidone, uses
2923-17-3, Lithium trifluoroacetate 2923-20-8, Ethanesulfonic
acid, pentafluoro-, lithium salt 4437-85-8, Butylene carbonate
5137-45-1, 1-Ethoxy-2-methoxyethane 7790-69-4, Lithium
nitrate 7791-03-9, Lithium perchlorate 13453-75-3, Lithium
fluorosulfonate 14024-11-4, Lithium tetrachloroaluminate
14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium
tetraphenylborate 15955-98-3, Lithium tetrachlorogallate

18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 30215-10-2, Lithium benzenesulfonate 33454-82-9, Lithium trifluoromethanesulfonate 35363-40-7, Ethyl propyl carbonate, uses 56525-42-9, Methyl propyl carbonate, uses 90076-65-6, Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt 132404-42-3, Methane, tris[(trifluoromethyl)sulfonyl]-, ion(1-), lithium

RL: DEV (Device component use); USES (Uses)

(**nonaq.** battery **electrolytes** containing;
electrode-active materials for primary or secondary lithium
batteries containing unsatd. nitrite ester additives)

L115 ANSWER 10 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:540171 HCAPLUS

DOCUMENT NUMBER: 137:111687

TITLE: Electrode-active materials for primary or
secondary lithium batteries containing
unsaturated phosphate ester additives

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2002094479	A1	20020718	US 2001-761626	200101 17
US 6511772	B2	20030128		
PRIORITY APPLN. INFO.:			US 2001-761626	200101 17

OTHER SOURCE(S): MARPAT 137:111687

AB Electrode-active materials for primary or secondary lithium batteries are fabricated in a method that includes mixing the active electrode material with an unsatd. phosphate ester prior to contact of the active material with its current collector. The resulting electrode couple is activated by a **non-aqueous electrolyte** (especially containing Li salts) which dissolves the phosphate ester. The unsatd. phosphate ester has the general structure (R1)P(:O)(OR2)(OR3), in which at least one of the R groups is H (but not all 3) and at least one of the R groups is a C≥3-unsatd. group. Suitable phosphate esters include monobenzyl phosphate, benzyl phosphate, benzyl di-Me phosphate, allyl di-Me phosphate, cyanomethyl di-Me phosphate, etc.

IT 109-99-9, Tetrahydrofuran, uses 110-71-4,
1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2,
Triglyme 143-24-8, Tetraglyme 7790-69-4, Lithium
nitrate 90076-65-6, Methanesulfonamide,
1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt

RL: DEV (Device component use); USES (Uses)

(**nonaq.** battery **electrolytes** containing;
electrode-active materials for primary or secondary lithium

batteries containing unsatd. phosphate ester additives)

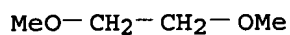
RN 109-99-9 HCAPLUS

CN Furan, tetrahydro- (CA INDEX NAME)



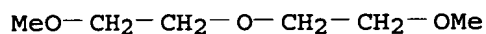
RN 110-71-4 HCAPLUS

CN Ethane, 1,2-dimethoxy- (CA INDEX NAME)



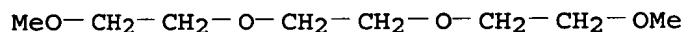
RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



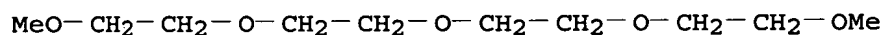
RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (CA INDEX NAME)



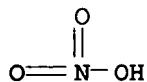
RN 143-24-8 HCAPLUS

CN 2,5,8,11,14-Pentaoxapentadecane (CA INDEX NAME)



RN 7790-69-4 HCAPLUS

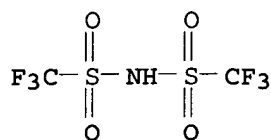
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

- IC ICM H01M004-62
ICS H01M010-40; H01M004-54
- INCL 429212000; X42-923.2; X42-921.7; X42-934.2; X42-934.1; X42-933.0;
X42-933.2; X42-921.9; X42-923.15; X42-9 5.2
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST battery electrode unsatd phosphate ester additive; cathode anode
battery unsatd phosphate ester additive; **electrolyte**
nonaq lithium battery phosphate ester additive
- IT Lactams
Lactones
RL: DEV (Device component use); USES (Uses)
(**nonaq.** battery **electrolytes** containing;
electrode-active materials for primary or secondary lithium
batteries containing unsatd. phosphate ester additives)
- IT Battery **electrolytes**
(**nonaq.**; electrode-active materials for primary or
secondary lithium batteries containing unsatd. phosphate ester
additives)
- IT 1623-07-0, Benzyl phosphate 1623-10-5, Diallyl methyl phosphate
1623-19-4, Triallyl phosphate 1707-92-2, Tribenzyl phosphate
1779-34-6, Tripropargyl phosphate 7664-38-2D, Phosphoric acid,
unsatd. esters 7748-09-6, Diallyl phosphate 55343-62-9,
Propargyl phosphate 56379-74-9, Phosphoric acid, dimethyl
2-propynyl ester 67293-73-6, Phosphoric acid, dimethyl
phenylmethyl ester 142804-89-5, Phosphoric acid, phenylmethyl
ester 433979-69-2, Phosphoric acid, dimethyl nitromethyl ester
433979-70-5, 2-Propyn-1-ol, hydrogen phosphate 433979-71-6,
Phosphoric acid, cyanomethyl dimethyl ester 433979-72-7,
Phosphoric acid, bis(cyanomethyl) methyl ester
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(**nonaq.** battery **electrolyte** containing;
electrode-active materials for primary or secondary lithium
batteries containing unsatd. phosphate ester additives)
- IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Dimethyl formamide,
uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate
96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
105-58-8, Diethyl carbonate 108-20-3, Diisopropyl ether
108-29-2, γ -Valerolactone 108-32-7, Propylene carbonate
109-99-9, Tetrahydrofuran, uses 110-71-4,
1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2,
Triglyme 127-19-5, Dimethyl acetamide 143-24-8,
Tetraglyme 463-79-6D, Carbonic acid, dialkyl esters 556-65-0,
Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl
methyl carbonate 623-96-1, Dipropyl carbonate 629-14-1,
1,2-Diethoxyethane 872-50-4, uses 2923-17-3, Lithium
trifluoroacetate 2923-20-8, Ethanesulfonic acid, pentafluoro-,
lithium salt 4437-85-8, Butylene carbonate 5137-45-1,

1-Ethoxy-2-methoxyethane 7790-69-4, Lithium nitrate
 7791-03-9, Lithium perchlorate 13453-75-3, Lithium fluorosulfonate
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
 tetrafluoroborate 14485-20-2, Lithium tetraphenylborate
 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium
 hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate
 29935-35-1, Lithium hexafluoroarsenate 30215-10-2, Lithium
 benzenesulfonate 33454-82-9, Lithium trifluoromethanesulfonate
 35363-40-7, Ethyl propyl carbonate, uses 56525-42-9, Methyl propyl
 carbonate, uses 90076-65-6, Methanesulfonamide,
 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt
 132404-42-3, Methane, tris[(trifluoromethyl)sulfonyl]-, ion(1-),
 lithium

RL: DEV (Device component use); USES (Uses)

(nonaq. battery electrolytes containing;
 electrode-active materials for primary or secondary lithium
 batteries containing unsatd. phosphate ester additives)

L115 ANSWER 11 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:153669 HCAPLUS

DOCUMENT NUMBER: 136:203066

TITLE: Sulfate additives for **nonaqueous**
electrolyte rechargeable batteries

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.

PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA

SOURCE: U.S., 7 pp., Cont.-in-part of U.S. 6,265,106.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 6

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 6350546	B1	20020226	US 2000-519534	200003 06
US 6013394	A	20000111	US 1998-9557	199801 20
US 6180283	B1	20010130	US 1999-460035	199912 13
US 6265106	B1	20010724	US 2000-491355	200001 26
CA 2316438	A1	20010613	CA 2000-2316438	200008 18
EP 1109244	A2	20010620	EP 2000-311118	200012 13
EP 1109244	A3	20020724		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001176548	A	20010629	JP 2000-378551	200012 13
TW 478201	B	20020301	TW 2000-89126603	

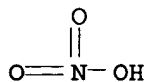
PRIORITY APPLN. INFO.:	US 1998-9557	A2	200012 13
			199801 20
	US 1999-460035	A2	199912 13
	US 2000-491355	A2	200001 26
	US 2000-519534	A	200003 06

AB A lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, is described. The stated benefits are realized by the addition of at least one sulfate additive to an electrolyte comprising an alkali metal salt dissolved in a solvent mixture that includes ethylene carbonate, di-Me carbonate, ethylmethyl carbonate and di-Et carbonate. The preferred additive is selected from a silyl sulfate, tin sulfate or an organic sulfate.

IT 7790-69-4, Lithium nitrate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (sulfate additives for **nonaq. electrolyte**
 rechargeable batteries)

RN 7790-69-4 HCAPLUS

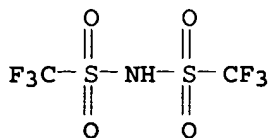
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-16

INCL 429340000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT Secondary batteries
 (lithium; sulfate additives for **nonaq. electrolyte** rechargeable batteries)
 IT Battery electrolytes
 (sulfate additives for **nonaq. electrolyte** rechargeable batteries)
 IT Carbon black, uses
 Carbon fibers, uses
 Coke
 RL: DEV (Device component use); USES (Uses)
 (sulfate additives for **nonaq. electrolyte** rechargeable batteries)
 IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (sulfate additives for **nonaq. electrolyte** rechargeable batteries)
 IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (mesocarbon microbeads; sulfate additives for **nonaq. electrolyte** rechargeable batteries)
 IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6, Titanium, uses 12597-68-1, Stainless steel, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (powder; sulfate additives for **nonaq. electrolyte** rechargeable batteries)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate 2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 7790-69-4, Lithium nitrate 7791-03-9, Lithium perchlorate 13453-75-3, Fluorosulfuric acid, lithium salt 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate, uses 56525-42-9, Methyl propyl carbonate, uses 90076-65-6 115028-88-1 132404-42-3
 RL: DEV (Device component use); USES (Uses)
 (sulfate additives for **nonaq. electrolyte** rechargeable batteries)
 IT 57-52-3, Bis(Triethyltin) sulfate 75-93-4, Methyl sulfate 110-92-9, Pentyl sulfate 540-82-9, Ethyl sulfate 4153-34-8, Bis(Trimethyltin) sulfate 10031-62-6, Tin sulfate 10218-25-4, Bis(Tripropyltin) sulfate 10249-85-1, Bis(Tributyltin) sulfate 13425-84-8, Propyl sulfate 15507-13-8, Butyl sulfate 18056-07-0, Bis(triethylsilyl)sulfate 18166-30-8 18230-79-0, Mono(trimethylsilyl)sulfate 18306-29-1, Bis(trimethylsilyl)sulfate 18495-74-4, Sulfuric acid, bis(phenylmethyl) ester 21706-75-2, Sulfuric acid, monoallyl ester 26687-85-4, Sulfuric acid, MonoBenzyl ester 27063-40-7, Diallyl sulfate 54761-02-3 57875-67-9, Mono(Triethyltin) sulfate 59427-05-3, Allyl pentyl sulfate 63869-87-4, Mono(Trimethyltin) sulfate 91695-35-1, Mono(triethylsilyl)sulfate 191605-42-2, Allyl methyl sulfate 320381-72-4, Ethyl Benzyl sulfate 320381-73-5, Benzyl propyl sulfate 320381-74-6, Benzyl butyl

sulfate 320381-75-7, Benzyl pentyl sulfate 320381-76-8, Allyl ethyl sulfate 320381-77-9, Allyl propyl sulfate 320381-78-0, Allyl butyl sulfate 320381-79-1, Mono(Tripropyltin) sulfate 320381-80-4, Mono(Tributyltin) sulfate 320381-81-5, Mono(Tripentyltin) sulfate 320381-82-6, Bis(Tripentyltin) sulfate 320381-83-7 320381-84-8 320381-85-9, Bis(tripropylsilyl)sulfate 320381-86-0, Bis(tributylsilyl)sulfate 320381-87-1 343849-76-3, Benzyl methyl sulfate

RL: MOA (Modifier or additive use); USES (Uses)
(sulfate additives for **nonaq. electrolyte**
rechargeable batteries)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L115 ANSWER 12 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:453469 HCAPLUS

DOCUMENT NUMBER: 135:48610

TITLE: Organic carbonate additives for
nonaqueous electrolyte
rechargeable electrochemical cells

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 11 pp., Cont.-in-part of
U.S. Ser. No. 302,773.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001004507	A1	20010621	US 2000-738143	20001215
JP 2000133306	A	20000512	JP 1999-299974	19991021
CA 2358333	A1	20020615	CA 2001-2358333	20011004
JP 2002208434	A	20020726	JP 2001-369906	20011204
EP 1215746	A1	20020619	EP 2001-310472	20011214
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
US 2003129500	A1	20030710	US 2002-235405	20020905
US 6759170	B2	20040706		
PRIORITY APPLN. INFO.:			US 1998-105280P	P 19981022
			US 1999-302773	A2

199904
30

US 2000-738143

A

200012
15

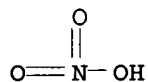
OTHER SOURCE(S): MARPAT 135:48610

AB A lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, is disclosed. The stated benefits are realized by the addition of at least one carbonate additive to an electrolyte comprising an alkali metal salt dissolved in a solvent mixture that includes ethylene carbonate and an equilibrated mixture of di-Me carbonate, ethylmethyl carbonate and di-Et carbonate. The preferred additive is either a linear or cyclic carbonate containing covalent O-X and O-Y bonds on opposite sides of a carbonyl group wherein at least one of the O-X and the O-Y bonds has a dissociation energy less than about 80 kcal/mol.

IT 7790-69-4, Lithium nitrate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (organic carbonate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)

RN 7790-69-4 HCAPLUS

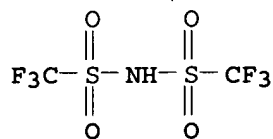
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
 lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-58

ICS H01M004-50; H01M004-48; H01M004-52; H01M010-40

INCL 429332000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Fluoropolymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)
 (binder; organic carbonate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)

- IT Secondary batteries
(lithium; organic carbonate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)
- IT Battery electrolytes
(organic carbonate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)
- IT Carbon black, uses
Carbon fibers, uses
Carbonaceous materials (technological products)
Coke
RL: DEV (Device component use); USES (Uses)
(organic carbonate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)
- IT 24937-79-9, PvdF
RL: TEM (Technical or engineered material use); USES (Uses)
(binder; organic carbonate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)
- IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(glassy; organic carbonate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate
623-53-0, Ethylmethyl carbonate 2923-17-3 2923-20-8 7439-93-2,
Lithium, uses 7782-42-5, Graphite, uses 7790-69-4,
Lithium nitrate 7791-03-9, Lithium perchlorate 12190-79-3,
Cobalt lithium oxide colio2 13453-75-3, Lithium fluorosulfate
14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
tetrafluoroborate 14485-20-2, Lithium tetraphenylborate
15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium
hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate
29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
triflate 90076-65-6 115028-88-1 132404-42-3
RL: DEV (Device component use); USES (Uses)
(organic carbonate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)
- IT 1469-70-1, Allyl ethyl carbonate 3459-92-5, Dibenzyl carbonate
4427-92-3, 4-Phenyl-1,3-dioxolan-2-one 13139-17-8,
Benzyl-(N-succinimidyl)carbonate 15022-08-9, Diallyl carbonate
57772-64-2, 1,5-Bis(succinimidooxycarbonyloxy)pentane 59577-32-1
62210-73-5, N-Benzylloxycarbonyloxy-5-norbornene-2,3-dicarboximide
66065-85-8, Succinimidyl-2,2,2-trichloroethyl carbonate
74124-79-1, Bis(N-succinimidyl)carbonate 82911-69-1,
N-(9-Fluorenylmethoxycarbonyloxy)succinimide 88544-01-8
RL: MOA (Modifier or additive use); USES (Uses)
(organic carbonate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)
- IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6,
Titanium, uses 12597-68-1, stainless steel, uses
RL: MOA (Modifier or additive use); USES (Uses)
(powder; organic carbonate additives for **nonaq.**
electrolyte rechargeable electrochem. cells)

L115 ANSWER 13 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:453468 HCAPLUS

DOCUMENT NUMBER: 135:35229

TITLE: Phosphonate additives for **nonaqueous**
electrolyte in rechargeable
electrochemical cells

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.

PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA
 SOURCE: U.S. Pat. Appl. Publ., 8 pp., Cont.-in-part of
 U.S. 6,200,701.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001004506	A1	20010621	US 2000-740639	20001219
US 6495285	B2	20021217		
US 6200701	B1	20010313	US 1999-324268	19990602
PRIORITY APPLN. INFO.:			US 1999-117109P	P 19990125
			US 1999-324268	A2 19990602

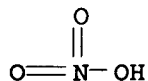
OTHER SOURCE(S): MARPAT 135:35229

AB A lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, is disclosed. The stated benefits are realized by the addition of at least one phosphonate additive having the formula (R1O)P(:O) (OR2) (R3) provided in the electrolyte.- In the phosphonate formula, R3 is a hydrogen atom and wherein at least one, but not both, of R1 and R2 is a hydrogen atom and the other of R1 and R2 is an organic group containing 1 to 13 carbon atoms. Or, at least one of R1 and R2 is an organic group containing at least 3 carbon atoms and having an sp or sp2 hybridized carbon atom bonded to an sp3 hybridized carbon atom bonded to the oxygen atom bonded to the phosphorous atom, or at least one of R1 and R2 is an unsatd. inorg. group.

IT 7790-69-4, Lithium nitrate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (phosphonate additives for nonaq. electrolyte
 in rechargeable electrochem. cells)

RN 7790-69-4 HCAPLUS

CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

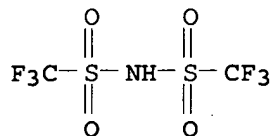


● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,

lithium salt (9CI) (CA INDEX NAME)



● Li

- IC ICM H01M004-58
ICS H01M004-48; H01M004-50; H01M004-52; H01M010-40
INCL 429330000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(binder; phosphonate additives for **nonaq. electrolyte** in rechargeable electrochem. cells)
IT Secondary batteries
(lithium; phosphonate additives for **nonaq. electrolyte** in rechargeable electrochem. cells)
IT Battery **electrolytes**
(phosphonate additives for **nonaq. electrolyte** in rechargeable electrochem. cells)
IT Carbon black, uses
Carbon fibers, uses
Coke
RL: DEV (Device component use); USES (Uses)
(phosphonate additives for **nonaq. electrolyte** in rechargeable electrochem. cells)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate
2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 7439-93-2,
Lithium, uses 7782-42-5, Graphite, uses 7790-69-4,
Lithium nitrate 7791-03-9, Lithium perchlorate 13453-75-3,
Lithium fluorosulfate 14024-11-4, Lithium tetrachloroaluminate
14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium
tetraphenylborate 15955-98-3, Lithium tetrachlorogallate
18424-17-4, Lithium hexafluoroantimonate 21324-40-3; Lithium
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 35363-40-7, Ethylpropyl carbonate
52627-24-4, Cobalt lithium oxide 56525-42-9, Methylpropyl
carbonate 90076-65-6 115028-88-1 132404-42-3
RL: DEV (Device component use); USES (Uses)
(phosphonate additives for **nonaq. electrolyte** in rechargeable electrochem. cells)
IT 1980-99-0, Dipropargyl phosphonate 13598-36-2D, Phosphonic acid,
ester 17176-77-1, dibenzyl phosphonate 23679-20-1, Diallyl
phosphonate
RL: MOA (Modifier or additive use); USES (Uses)
(phosphonate additives for **nonaq. electrolyte** in rechargeable electrochem. cells)

L115 ANSWER 14 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

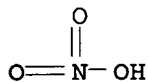
ACCESSION NUMBER: 2001:451045 HCAPLUS
 DOCUMENT NUMBER: 135:35213
 TITLE: Sulfate additives for **nonaqueous electrolyte** rechargeable cells
 INVENTOR(S): Gan, Hong; Takeuchi, Esther S.
 PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA
 SOURCE: Eur. Pat. Appl., 7 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 6
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1109244	A2	20010620	EP 2000-311118	20001213
EP 1109244	A3	20020724		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6180283	B1	20010130	US 1999-460035	19991213
US 6265106	B1	20010724	US 2000-491355	20000126
US 6350546	B1	20020226	US 2000-519534	20000306
PRIORITY APPLN. INFO.:			US 1999-460035	A 19991213
			US 2000-491355	A 20000126
			US 2000-519534	A 20000306
			US 1998-9557	A 19980120

AB. A lithium ion electrochem. cell has high charge/discharge capacity, long cycle life and exhibits a reduced first cycle irreversible capacity. The stated benefits are realized by the addition of at least one sulfate additive to an electrolyte comprising an alkali metal salt dissolved in a solvent mixture that includes ethylene carbonate, di-Me carbonate, ethylmethyl carbonate and di-Et carbonate. The preferred additive is selected from a silyl sulfate, tin sulfate or an organic sulfate.

IT 7790-69-4, Lithium nitrate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (sulfate additives for **nonaq. electrolyte** rechargeable cells)
 RN 7790-69-4 HCAPLUS

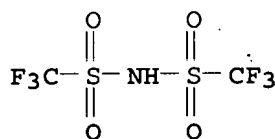
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery nonaq electrolyte sulfate additive

IT Fluoropolymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(binder; sulfate additives for nonaq.
electrolyte rechargeable cells)

IT Secondary batteries

(lithium; sulfate additives for nonaq.
electrolyte rechargeable cells)

IT Battery electrolytes

(sulfate additives for nonaq. electrolyte
rechargeable cells)

IT Carbon black, uses

Carbon fibers, uses

Coke

RL: DEV (Device component use); USES (Uses)
(sulfate additives for nonaq. electrolyte
rechargeable cells)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)
(glassy; sulfate additives for nonaq.
electrolyte rechargeable cells)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6,
Titanium, uses 12597-68-1, stainless steel, uses

RL: MOA (Modifier or additive use); USES (Uses)
(powder; sulfate additives for nonaq.
electrolyte rechargeable cells)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate

616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate

623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate
 2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 7782-42-5,
 Graphite, uses 7790-69-4, Lithium nitrate 7791-03-9,
 Lithium perchlorate 13453-75-3, Lithium fluorosulfate
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
 tetrafluoroborate 14485-20-2, Lithium tetraphenylborate
 15955-98-3, Lithium tetrachlorogallate 21324-40-3, Lithium
 hexafluorophosphate 33454-82-9, Lithium triflate 35363-40-7,
 Ethylpropyl carbonate 52627-24-4, Cobalt lithium oxide
 56525-42-9, Methylpropyl carbonate 90076-65-6
 115028-88-1 132404-42-3

RL: DEV (Device component use); USES (Uses)
 (sulfate additives for **nonaq. electrolyte**
 rechargeable cells)

IT 57-52-3, Bis(triethyltin) sulfate 75-93-4, Monomethyl sulfate
 110-92-9, Sulfuric acid, monopentyl ester 540-82-9, Monoethyl
 sulfate 4153-34-8, Bis(trimethyltin) sulfate 10218-25-4,
 Bis(tripropyltin) sulfate 10249-85-1, Bis(tributyltin) sulfate
 13425-84-8, Sulfuric acid, monopropyl ester 15507-13-8, Monobutyl
 sulfate 18056-07-0, Bis(triethylsilyl) sulfate 18166-30-8
 18230-79-0 18306-29-1, Bis(trimethylsilyl) sulfate 18495-74-4,
 Dibenzyl sulfate 21706-75-2, Sulfuric acid, monoallyl ester
 26687-85-4, Sulfuric acid, monobenzyl ester 27063-40-7
 59427-05-3 63869-87-4 91695-35-1 191605-42-2 320381-72-4
 320381-73-5 320381-74-6 320381-75-7 320381-76-8 320381-77-9
 320381-78-0 320381-82-6 320381-83-7 320381-84-8 320381-85-9
 320381-86-0 320381-87-1 343849-76-3

RL: MOA (Modifier or additive use); USES (Uses)
 (sulfate additives for **nonaq. electrolyte**
 rechargeable cells)

L115 ANSWER 15 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:241686 HCAPLUS

DOCUMENT NUMBER: 134:240188

TITLE: Nitrite additives for **nonaqueous**
electrolyte rechargeable electrochemical
 cells

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.

PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA

SOURCE: U.S., 10 pp.
 CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 6210839	B1	20010403	US 1999-338887	199906 23
CA 2298417	C	20040210	CA 2000-2298417	200002 14
CA 2298417	A1	20001223		
TW 447165	B	20010721	TW 2000-89107150	200004 17
IL 136877	A	20040601	IL 2000-136877	

PRIORITY APPLN. INFO.: US 1999-117104P P 200006
19
199901
25
US 1999-338887 A 199906
23

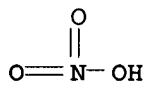
OTHER SOURCE(S): MARPAT 134:240188

AB A lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, is disclosed. The stated benefits are realized by the addition of at least one nitrite additive to an electrolyte comprising an alkali metal salt dissolved in a solvent mixture that includes ethylene carbonate, di-Me carbonate, Et Me carbonate and di-Et carbonate. The preferred additive is an alkyl nitrite compound

IT 7790-69-4, Lithium nitrate 90076-65-6
RL: DEV (Device component use); USES (Uses)
(nitrite additives for nonaq. electrolyte rechargeable electrochem. cells)

RN 7790-69-4 HCAPLUS

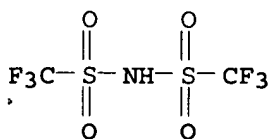
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-18

INCL 429307000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Electrodes
(glassy carbon; nitrite additives for nonaq. electrolyte rechargeable electrochem. cells)

IT Battery electrolytes
Secondary batteries

(nitrite additives for **nonaq. electrolyte**
rechargeable electrochem. cells)

IT Carbon black, uses
Carbon fibers, uses
Coke
RL: DEV (Device component use); USES (Uses)
(nitrite additives for **nonaq. electrolyte**
rechargeable electrochem. cells)

IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(nitrite additives for **nonaq. electrolyte**
rechargeable electrochem. cells)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate
2923-17-3 2923-20-8 7439-93-2, Lithium, uses 7782-42-5,
Graphite, uses 7790-69-4, Lithium nitrate 7791-03-9,
Lithium perchlorate 11113-67-0, Iron lithium oxide 11115-95-0,
Lithium niobium oxide 11126-15-1, Lithium vanadium oxide
12190-79-3, Cobalt lithium oxide colio2 13453-75-3, Fluorosulfuric
acid, lithium salt 14024-11-4, Lithium tetrachloroaluminate
14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium
tetraphenylborate 15955-98-3, Lithium tetrachlorogallate
18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 35363-40-7, Ethylpropyl carbonate
37296-91-6, Lithium Molybdenum oxide 37367-96-7, Lithium
Molybdenum sulfide 39300-70-4, Lithium nickel oxide 39302-37-9,
Lithium titanium oxide 39457-42-6, Lithium manganese oxide
51177-06-1, Chromium Lithium oxide 52627-24-4, Cobalt lithium
oxide 56321-19-8, Lithium niobium sulfide 56525-42-9,
Methylpropyl carbonate 61673-65-2, Lithium niobium selenide
66332-25-0 74245-06-0, Lithium vanadium sulfide 80341-49-7, Iron
lithium sulfide 90076-65-6 96352-80-6, Lithium
Molybdenum selenide 96352-81-7, Lithium Molybdenum telluride
103288-79-5, Cobalt lithium sulfide 104708-77-2, Copper Lithium
oxide 115028-88-1 132404-42-3 148884-75-7, Cobalt lithium
selenide 264142-74-7, Lithium vanadium telluride 264142-78-1,
Copper lithium sulfide 264142-79-2, Copper lithium selenide
264142-80-5, Copper lithium telluride 264142-81-6, Lithium niobium
telluride 264142-82-7, Iron lithium selenide 264142-83-8, Iron
lithium telluride 264142-85-0, Lithium nickel selenide
264142-86-1, Lithium nickel telluride 264142-87-2, Cobalt lithium
telluride 264142-88-3, Lithium manganese sulfide 264142-89-4,
Lithium manganese selenide 264142-90-7, Lithium manganese
telluride
RL: DEV (Device component use); USES (Uses)
(nitrite additives for **nonaq. electrolyte**
rechargeable electrochem. cells)

IT 109-95-5, Ethyl nitrite 540-80-7, tert-Butyl nitrite 541-42-4,
IsoPropyl nitrite 542-56-3, Isobutyl nitrite 543-67-9, Propyl
nitrite 544-16-1, Butyl nitrite 624-91-9, Methyl nitrite
935-05-7, Benzyl nitrite 7429-90-5, Aluminum, uses 7440-02-0,
Nickel, uses 7440-32-6, Titanium, uses 12597-68-1, Stainless
steel, uses 34207-39-1, Nitrous acid, phenyl ester
RL: MOA (Modifier or additive use); USES (Uses)
(nitrite additives for **nonaq. electrolyte**
rechargeable electrochem. cells)

IT 24937-79-9, PvdF

RL: TEM (Technical or engineered material use); USES (Uses)
 (nitrite additives for **nonaq. electrolyte**
 rechargeable electrochem. cells)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L115 ANSWER 16 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:178369 HCAPLUS

DOCUMENT NUMBER: 134:210516

TITLE: Phosphonate additives for **nonaqueous**
electrolyte in rechargeable cells

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.

PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA

SOURCE: U.S., 9 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 6200701	B1	20010313	US 1999-324268	199906 02
CA 2298792	C	20040427	CA 2000-2298792	200002 11
CA 2298792	A1	20001202		
TW 484245	B	20020421	TW 2000-89107149	200004 17
US 2001004506	A1	20010621	US 2000-740639	200012 19
US 6495285	B2	20021217		
PRIORITY APPLN. INFO.:			US 1999-117109P	P 199901 25
			US 1999-324268	A 199906 02

OTHER SOURCE(S): MARPAT 134:210516

AB A lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, is disclosed. The stated benefits are realized by the addition of at least one phosphonate additive to an electrolyte comprising an alkali metal salt dissolved in a solvent mixture that includes ethylene carbonate, di-Me carbonate, ethylmethyl carbonate and di-Et carbonate. The preferred additive is an alkyl phosphonate compound

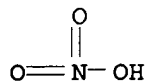
IT 7790-69-4, Lithium nitrate 90076-65-6

RL: DEV (Device component use); USES (Uses)

(phosphonate additives for **nonaq. electrolyte**
 in rechargeable cells)

RN 7790-69-4 HCAPLUS

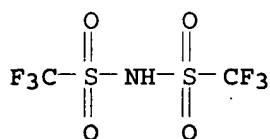
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-04

INCL 429203000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Fluoropolymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(binder; phosphonate additives for **nonaq.**
electrolyte in rechargeable cells)

IT Oxides (inorganic), uses

Selenides

Sulfides, uses

Tellurides

RL: TEM (Technical or engineered material use); USES (Uses)
(lithiated; phosphonate additives for **nonaq.**
electrolyte in rechargeable cells)

IT Secondary batteries

(lithium; phosphonate additives for **nonaq.**
electrolyte in rechargeable cells)

IT Battery **electrolytes**

(phosphonate additives for **nonaq. electrolyte**
in rechargeable cells)

IT Carbon black, uses

Carbon fibers, uses

Coke

RL: DEV (Device component use); USES (Uses)
(phosphonate additives for **nonaq. electrolyte**
in rechargeable cells)

IT Functional groups

(phosphonate group; phosphonate additives for **nonaq.**
electrolyte in rechargeable cells)

IT 24937-79-9, PvdF

RL: TEM (Technical or engineered material use); USES (Uses)
(binder; phosphonate additives for **nonaq.**

electrolyte in rechargeable cells)

- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
 623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate
 2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 7439-93-2,
 Lithium, uses 7782-42-5, Graphite, uses 7790-69-4,
 Lithium nitrate 7791-03-9, Lithium perchlorate 12190-79-3,
 Cobalt lithium oxide colio2 13453-75-3, Lithium fluorosulfate
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
 tetrafluoroborate 14485-20-2, Lithium tetraphenylborate
 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium
 hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate
 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
 triflate 35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl
 propyl carbonate 90076-65-6 115028-88-1 132404-42-3
 RL: DEV (Device component use); USES (Uses)
 (phosphonate additives for **nonaq. electrolyte**
 in rechargeable cells)
- IT 762-04-9, Diethyl phosphonate 868-85-9, Dimethyl phosphonate
 1610-33-9, Ethyl methyl phosphonate 1809-19-4, Dibutyl phosphonate
 1809-21-8, Dipropyl phosphonate 4712-55-4, Diphenyl phosphonate
 17176-77-1, Dibenzyl phosphonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (phosphonate additives for **nonaq. electrolyte**
 in rechargeable cells)
- IT 11113-67-0, Iron lithium oxide 11115-95-0, Lithium niobium oxide
 11126-15-1, Lithium vanadium oxide 12680-08-9, Lithium titanium
 sulfide 37296-91-6, Lithium molybdenum oxide 37367-96-7, Lithium
 molybdenum sulfide 39300-70-4, Lithium nickel oxide 39302-37-9,
 Lithium titanium oxide 39457-42-6, Lithium manganese oxide
 51177-06-1, Chromium lithium oxide 52627-24-4, Cobalt lithium
 oxide 56321-19-8, Lithium niobium sulfide 61673-65-2, Lithium
 niobium selenide 61673-69-6, Lithium titanium selenide
 61673-70-9, Lithium titanium telluride 61673-71-0, Lithium
 vanadium selenide 74245-06-0, Lithium vanadium sulfide
 80341-49-7, Iron lithium sulfide 96352-80-6, Lithium molybdenum
 selenide 96352-81-7, Lithium molybdenum telluride 103288-79-5,
 Cobalt lithium sulfide 104708-77-2, Copper lithium oxide
 148884-75-7, Cobalt lithium selenide 264142-74-7, Lithium vanadium
 telluride 264142-75-8, Chromium lithium sulfide 264142-76-9,
 Chromium lithium selenide 264142-77-0, Chromium lithium telluride
 264142-78-1, Copper lithium sulfide 264142-79-2, Copper lithium
 selenide 264142-80-5, Copper lithium telluride 264142-81-6,
 Lithium niobium telluride 264142-82-7, Iron lithium selenide
 264142-83-8, Iron lithium telluride 264142-84-9, Lithium nickel
 sulfide 264142-85-0, Lithium nickel selenide 264142-86-1,
 Lithium nickel telluride 264142-87-2, Cobalt lithium telluride
 264142-88-3, Lithium manganese sulfide 264142-89-4, Lithium
 manganese selenide 264142-90-7, Lithium manganese telluride
 RL: TEM (Technical or engineered material use); USES (Uses)
 (phosphonate additives for **nonaq. electrolyte**
 in rechargeable cells)

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L115 ANSWER 17 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2001:45110 HCAPLUS
 DOCUMENT NUMBER: 134:88840

TITLE: Dicarbonate additives for **nonaqueous electrolyte** rechargeable cells
 INVENTOR(S): Gan, Hong; Takeuchi, Esther S.
 PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA
 SOURCE: U.S., 9 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6174629	B1	20010116	US 1999-394316	19990910
CA 2298301	C	20040309	CA 2000-2298301	20000208
CA 2298301	A1	20010309		
TW 447164	B	20010721	TW 2000-89107148	20000417
PRIORITY APPLN. INFO.:			US 1999-117107P	P 19990125
			US 1999-394316	A 19990910

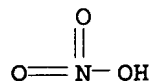
OTHER SOURCE(S): MARPAT 134:88840

AB A lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, is disclosed. The stated benefits are realized by the addition of at least one dicarbonate additive to an electrolyte comprising an alkali metal salt dissolved in a solvent mixture that includes ethylene carbonate, di-Me carbonate, ethylmethyl carbonate and di-Et carbonate. The preferred additive is an alkyl dicarbonate compound

IT 7790-69-4, Lithium nitrate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (dicarbonate additives for **nonaq. electrolyte** rechargeable cells)

RN 7790-69-4 HCAPLUS

CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

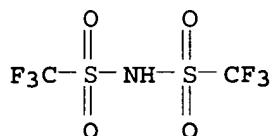


● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,

lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-16

INCL 429326000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Battery **electrolytes**(dicarbonate additives for **nonaq. electrolyte**
rechargeable cells)

IT Carbon black, uses

Carbon fibers, uses

Coke

RL: DEV (Device component use); USES (Uses)

(dicarbonate additives for **nonaq. electrolyte**
rechargeable cells)

IT Fluoropolymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(dicarbonate additives for **nonaq. electrolyte**
rechargeable cells)

IT Secondary batteries

(lithium; dicarbonate additives for **nonaq.**
electrolyte rechargeable cells)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate
 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate
 2923-17-3 2923-20-8 7439-93-2, Lithium, uses 7782-42-5,
 Graphite, uses 7790-69-4, Lithium nitrate 7791-03-9,
 Lithium perchlorate 11113-67-0, Iron Lithium oxide 11115-95-0,
 Lithium niobium oxide 11126-15-1, Lithium vanadium oxide
 12680-08-9, Lithium titanium sulfide 13453-75-3, Lithium
 fluorosulfate 14024-11-4, Lithium tetrachloroaluminate
 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium
 tetraphenylborate 15955-98-3, Lithium tetrachlorogallate
 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium
 hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate
 37296-91-6, Lithium molybdenum oxide 37367-96-7, Lithium
 molybdenum sulfide 39300-70-4, Lithium nickel oxide 39302-37-9,
 Lithium titanium oxide 39457-42-6, Lithium manganese oxide
 51177-06-1, Chromium Lithium oxide 52627-24-4, Cobalt Lithium
 oxide 56321-19-8, Lithium niobium sulfide 56525-42-9, Methyl
 propyl carbonate 61673-71-0, Lithium vanadium selenide
 74245-06-0, Lithium vanadium sulfide 80341-49-7, Iron Lithium
 sulfide 90076-65-6 103288-79-5, Cobalt Lithium sulfide
 104708-77-2, Copper Lithium oxide 115028-88-1 132404-42-3
 148884-75-7, Cobalt Lithium selenide 264142-74-7, Lithium vanadium
 telluride 264142-75-8, Chromium Lithium sulfide 264142-78-1,
 Copper Lithium sulfide 264142-84-9, Lithium nickel sulfide
 264142-87-2, Cobalt Lithium telluride 264142-88-3, Lithium

manganese sulfide

RL: DEV (Device component use); USES (Uses)

(dicarbonate additives for **nonaq. electrolyte**
rechargeable cells)

IT 503-81-1D, Dicarmonic acid, alkyl esters 503-81-1D, Dicarmonic
acid, esters 5944-45-6 5944-47-8 31139-36-3, Dibenzy
dicarbonate 115491-93-5, Diallyl dicarbonate 116977-36-7
246140-06-7 246140-07-8 246140-10-3 246140-17-0 246140-18-1
246140-20-5 246140-22-7 246140-24-9 246140-26-1 246140-27-2
246140-29-4 316371-50-3

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)

(dicarbonate additives for **nonaq. electrolyte**
rechargeable cells)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)

(glassy; dicarbonate additives for **nonaq.**
electrolyte rechargeable cells)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L115 ANSWER 18 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:790241 HCAPLUS

DOCUMENT NUMBER: 133:323991

TITLE: Phosphate additives for **nonaqueous**
electrolyte in rechargeable lithium ion
batteries

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.

PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA

SOURCE: Eur. Pat. Appl., 14 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1050916	A1	20001108	EP 2000-303719	20000503
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6203942	B1	20010320	US 1999-303877	19990503
JP 2000331710	A	20001130	JP 2000-132538	20000501
PRIORITY APPLN. INFO.:			US 1999-303877	A 19990503
			US 1998-105279P	P 19981022

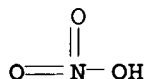
OTHER SOURCE(S): MARPAT 133:323991

AB In a lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, at least one phosphate additive is added to an electrolyte comprising an alkali metal salt dissolved in a solvent mixture that includes ethylene carbonate, di-Me carbonate, ethylmethyl carbonate and di-Et carbonate. The phosphate additive has the formula: $(R1O)P(:O)(OR2)(OR3)$ and wherein if R1, R2, and R3 are the same or different and may represent a H atom or a saturated or unsatd. organic group containing 1-13 C atoms and wherein R1, R2, and R3 are not H, at least one of them is CR4R5R6 wherein R4 is an aromatic substituent or an unsatd. organic or inorg. group and R5 and R6 are the same or different and may represent a H atom or a saturated or unsatd. organic or inorg. group; with the proviso that the phosphate additive is not dibenzyl phosphate. The preferred additive is an alkyl phosphate compound

IT 7790-69-4, Lithium nitrate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (phosphate additives for **nonaq. electrolyte**
 in rechargeable lithium ion batteries)

RN 7790-69-4 HCAPLUS

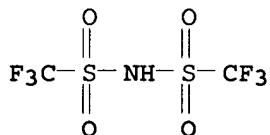
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Secondary batteries
 (lithium; phosphate additives for **nonaq. electrolyte** in rechargeable lithium ion batteries)

IT Battery **electrolytes**
 (phosphate additives for **nonaq. electrolyte** in rechargeable lithium ion batteries)

IT Alkali metals, uses
 Carbon black, uses
 Carbon fibers, uses
 Coke

RL: DEV (Device component use); USES (Uses)
 (phosphate additives for **nonaq. electrolyte**
 in rechargeable lithium ion batteries)

IT Fluoropolymers, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (phosphate additives for **nonaq. electrolyte**
 in rechargeable lithium ion batteries)

IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (glassy; phosphate additives for **nonaq. electrolyte** in rechargeable lithium ion batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
 623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate
 2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 7439-93-2,
 Lithium, uses 7782-42-5, Graphite, uses 7790-69-4,
 Lithium nitrate 7791-03-9, Lithium perchlorate 11113-67-0, Iron
 Lithium oxide 11126-15-1, Lithium vanadium oxide 12031-63-9,
 Lithium niobium oxide (LiNbO₃) 12190-79-3, Cobalt lithium oxide
 colio₂ 12680-08-9, Lithium titanium sulfide 13453-75-3, Lithium
 fluorosulfate 14024-11-4, Lithium tetrachloroaluminate
 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium
 tetraphenylborate 15955-98-3, Lithium tetrachlorogallate
 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium
 hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate
 37296-91-6, Lithium molybdenum oxide 37367-96-7, Lithium
 molybdenum sulfide 39300-70-4, Lithium nickel oxide 39302-37-9,
 Lithium titanium oxide 39457-42-6, Lithium manganese oxide
 51177-06-1, Chromium Lithium oxide 52627-24-4, Cobalt Lithium
 oxide 56321-19-8, Lithium niobium sulfide 56525-42-9, Methyl
 propyl carbonate 61673-65-2, Lithium niobium selenide
 61673-69-6, Lithium titanium selenide 61673-70-9, Lithium titanium
 telluride 61673-71-0, Lithium vanadium selenide 74245-06-0,
 Lithium vanadium sulfide 80341-49-7, Iron Lithium sulfide
 90076-65-6 96352-80-6, Lithium molybdenum selenide
 96352-81-7, Lithium molybdenum telluride 103288-79-5, Cobalt
 Lithium sulfide 104708-77-2, Copper Lithium oxide 115028-88-1
 132404-42-3 148884-75-7, Cobalt Lithium selenide 264142-74-7,
 Lithium vanadium telluride 264142-75-8, Chromium Lithium sulfide
 264142-76-9, Chromium Lithium selenide 264142-77-0, Chromium
 Lithium telluride 264142-78-1, Copper Lithium sulfide
 264142-79-2, Copper Lithium selenide 264142-81-6, Lithium niobium
 telluride 264142-82-7, Iron Lithium selenide 264142-83-8, Iron
 Lithium telluride 264142-84-9, Lithium nickel sulfide
 264142-85-0, Lithium nickel selenide 264142-86-1, Lithium nickel
 telluride 264142-87-2, Cobalt Lithium telluride 264142-88-3,
 Lithium manganese sulfide 264142-89-4, Lithium manganese selenide
 264142-90-7, Lithium manganese telluride
 RL: DEV (Device component use); USES (Uses)
 (phosphate additives for **nonaq. electrolyte**
 in rechargeable lithium ion batteries)

IT 107-66-4, Dibutylphosphate 598-02-7, Diethyl phosphate 701-64-4,
 Monophenyl phosphate 812-00-0, Monomethyl phosphate 813-78-5,
 Dimethyl phosphate 838-85-7, Diphenyl phosphate 884-90-2,
 Phosphoric acid, benzyl Diethyl ester 1623-06-9, Monopropyl
 phosphate 1623-07-0, Benzyl phosphate 1623-14-9, Monoethyl
 phosphate 1623-15-0, Monobutyl phosphate 1707-92-2, Tribenzyl
 phosphate 1804-93-9, Dipropyl phosphate 3066-75-9 7748-09-6,

Diallyl phosphate 10497-05-9, Tris(trimethylsilyl)phosphate
28519-15-5, Phosphoric acid, benzyl dibutyl ester 32636-65-0,
Diethyl Diphenylmethyl phosphate 67293-73-6, Phosphoric acid,
dimethyl phenylmethyl ester 269402-58-6, Phosphoric acid,
phenylmethyl Dipropyl ester

RL: MOA (Modifier or additive use); USES (Uses)

(phosphate additives for **nonaq. electrolyte**
in rechargeable lithium ion batteries)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L115 ANSWER 19 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:752090 HCAPLUS

DOCUMENT NUMBER: 133:284200

TITLE: Nitrate additives for **nonaqueous**
electrolyte rechargeable cells

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.

PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA

SOURCE: U.S., 10 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 6136477	A	20001024	US 1999-320633	199905 26
EP 1056145	A2	20001129	EP 2000-304390	200005 24
EP 1056145	A3	20011010		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2000348768	A	20001215	JP 2000-153066	200005 24
PRIORITY APPLN. INFO.:			US 1998-105278P	P 199810 22
			US 1999-320633	A 199905 26

OTHER SOURCE(S): MARPAT 133:284200

AB A lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, is disclosed. The stated benefits are realized by the addition of at least one nitrate additive to an electrolyte comprising an alkali metal salt dissolved in a solvent mixture that includes ethylene carbonate, di-Me carbonate, ethylmethyl carbonate and di-Et carbonate. The preferred additive is an organic alkyl nitrate compound

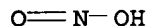
IT 13568-33-7, Lithium nitrite 90076-65-6

RL: DEV (Device component use); USES (Uses)

(nitrate additives for nonaq. electrolyte
rechargeable cells)

RN 13568-33-7 HCAPLUS

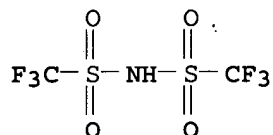
CN Nitrous acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-18

INCL 429307000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Secondary batteries
(lithium; nitrate additives for nonaq.
electrolyte rechargeable cells)

IT Battery electrolytes
(nitrate additives for nonaq. electrolyte
rechargeable cells)

IT Carbon black, uses
Carbon fibers, uses
Coke
RL: DEV (Device component use); USES (Uses)
(nitrate additives for nonaq. electrolyte
rechargeable cells)

IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(nitrate additives for nonaq. electrolyte
rechargeable cells)

IT 7440-44-0, Glassy carbon, uses
RL: DEV (Device component use); USES (Uses)
(glassy; nitrate additives for nonaq.
electrolyte rechargeable cells)

IT 556-65-0, Lithium thiocyanate 2923-17-3 2923-20-8 7439-93-2,
Lithium, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium
perchlorate 9002-88-4, Polyethylene 12190-79-3, Cobalt lithium
oxide colio2 13453-75-3, Lithium fluorosulfate 13568-33-7
, Lithium nitrite 14024-11-4, Lithium tetrachloroaluminate
14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium
tetraphenylborate 15955-98-3, Lithium tetrachlorogallate
18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium

hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 90076-65-6 115028-88-1
132404-42-3

RL: DEV (Device component use); USES (Uses)
(nitrate additives for **nonaq. electrolyte**
rechargeable cells)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate
623-53-0, Ethylmethyl carbonate 623-96-1, Dipropyl carbonate
872-36-6, Vinylene carbonate 4437-85-8, Butylene carbonate
35363-40-7, Ethylpropyl carbonate 56525-42-9, Methylpropyl
carbonate

RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)

(nitrate additives for **nonaq. electrolyte**
rechargeable cells)

IT 543-29-3, Isobutyl nitrate 627-13-4, Propyl nitrate 926-05-6,
tert-Butyl nitrate 928-45-0, Butyl nitrate 1712-64-7, Isopropyl
nitrate 2104-20-3, Phenyl nitrate 15285-42-4, Benzyl nitrate

RL: MOA (Modifier or additive use); USES (Uses)

(nitrate additives for **nonaq. electrolyte**
rechargeable cells)

IT 11115-95-0, Lithium niobium oxide 11126-15-1, Lithium vanadium
oxide 12680-08-9, Lithium titanium sulfide 37296-91-6, Lithium
molybdenum oxide 37367-96-7, Lithium molybdenum sulfide
39300-70-4, Lithium nickel oxide 39302-37-9, Lithium titanium
oxide 39457-42-6, Lithium manganese oxide 51177-06-1, Chromium
Lithium oxide 52627-24-4, Cobalt Lithium oxide 56321-19-8,
Lithium niobium sulfide 61673-65-2, Lithium niobium selenide
61673-69-6, Lithium titanium selenide 61673-70-9, Lithium titanium
telluride 61673-71-0, Lithium vanadium selenide 74245-06-0,
Lithium vanadium sulfide 96352-80-6, Lithium molybdenum selenide
96352-81-7, Lithium molybdenum telluride 103288-79-5, Cobalt
Lithium sulfide 104708-77-2, Copper Lithium oxide 148884-75-7,
Cobalt Lithium selenide 264142-74-7, Lithium vanadium telluride
264142-75-8, Chromium Lithium sulfide 264142-76-9, Chromium
Lithium selenide 264142-77-0, Chromium Lithium telluride
264142-78-1, Copper Lithium sulfide 264142-79-2, Copper Lithium
selenide 264142-80-5, Copper Lithium telluride 264142-81-6,
Lithium niobium telluride 264142-84-9, Lithium nickel sulfide
264142-85-0, Lithium nickel selenide 264142-86-1, Lithium nickel
telluride 264142-87-2, Cobalt Lithium telluride 264142-88-3,
Lithium manganese sulfide 264142-89-4, Lithium manganese selenide
264142-90-7, Lithium manganese telluride

RL: TEM (Technical or engineered material use); USES (Uses)

(nitrate additives for **nonaq. electrolyte**
rechargeable cells)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6,
Titanium, uses 12597-68-1, Stainless steel, uses

RL: MOA (Modifier or additive use); USES (Uses)

(powder; nitrate additives for **nonaq.**

electrolyte rechargeable cells)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L115 ANSWER 20 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:367148 HCAPLUS

DOCUMENT NUMBER: 132:350275

TITLE: Alkali metal electrochemical cell having an

improved cathode activated with a
nonaqueous electrolyte having
 a passivation inhibitor additive

INVENTOR(S): Takeuchi, Esther S.; Leising, Randolph A.; Gan,
 Hong

PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA

SOURCE: Eur. Pat. Appl., 18 pp.
 CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1005098	A2	20000531	EP 1999-308910	199911 09
EP 1005098	A3	20020410		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6221534	B1	20010424	US 1998-200304	199811 25
JP 2000164251	A	20000616	JP 1999-334319	199911 25
PRIORITY APPLN. INFO.:			US 1998-200304	A 199811 25

OTHER SOURCE(S): MARPAT 132:350275

AB The present invention is directed to an unexpected benefit in a lithium cell which may be derived from using a combination of silver vanadium oxide prepared in a temperature range of 450° to 500° activated with a **nonaq. electrolyte** having a passivation inhibitor additive selected from a nitrite, a nitrate, a carbonate, a dicarbonate, a phosphonate, a phosphate, a sulfate and hydrogen fluoride, and mixts. thereof. The benefits may include addnl. battery life resulting from a reduction in voltage delay and RDC build-up. A preferred electrolyte is 1M LiAsF₆ in a 50:50 mixture, by volume, of PC and DME having dibenzyl carbonate added therein.

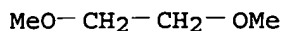
IT 109-99-9, uses 110-71-4, 1,2-Dimethoxyethane
 111-96-6 112-49-2, Triglyme 143-24-8,
 Tetraglyme 7790-69-4, Lithium nitrate 90076-65-6
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (alkali metal battery having improved cathode activated with **nonaq. electrolyte** having passivation inhibitor additive)

RN 109-99-9 HCAPLUS

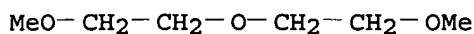
CN Furan, tetrahydro- (CA INDEX NAME)



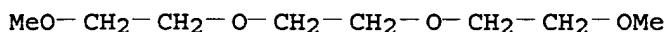
RN 110-71-4 HCAPLUS
 CN Ethane, 1,2-dimethoxy- (CA INDEX NAME)



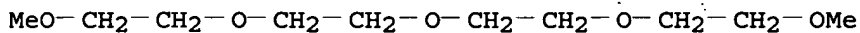
RN 111-96-6 HCAPLUS
 CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



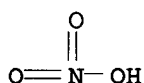
RN 112-49-2 HCAPLUS
 CN 2,5,8,11-Tetraoxadodecane (CA INDEX NAME)



RN 143-24-8 HCAPLUS
 CN 2,5,8,11,14-Pentaoxapentadecane (CA INDEX NAME)

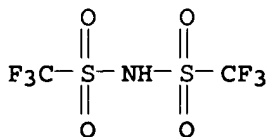


RN 7790-69-4 HCAPLUS
 CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



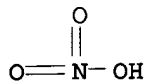
● Li

IT 7757-79-1, Potassium nitrate, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (alkali metal battery having improved cathode activated with

nonaq. electrolyte having passivation inhibitor
additive)

RN 7757-79-1 HCAPLUS

CN Nitric acid potassium salt (1:1) (CA INDEX NAME)



● K

IC ICM H01M006-16

ICS H01M004-48

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Air

Battery cathodes

(alkali metal battery having improved cathode activated with
nonaq. electrolyte having passivation inhibitor
additive)

IT Transition metal chalcogenides

RL: DEV (Device component use); USES (Uses)

(alkali metal battery having improved cathode activated with
nonaq. electrolyte having passivation inhibitor
additive)

IT 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide nio,
uses 1344-70-3, Copper oxide 7439-93-2, Lithium, uses
11104-61-3, Cobalt oxide 11105-02-5, Silver vanadium oxide
11115-78-9, Copper sulfide 11126-12-8, Iron sulfide 12039-13-3,
Titanium disulfide 12068-85-8, Iron disulfide 12789-09-2, Copper
vanadium oxide 181183-66-4, Copper silver vanadium oxide

RL: DEV (Device component use); USES (Uses)

(alkali metal battery having improved cathode activated with
nonaq. electrolyte having passivation inhibitor
additive)

IT 67-68-5, Dms0, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,
uses 79-20-9, Methyl acetate 96-48-0, γ-Butyrolactone
96-49-1, Ethylene carbonate 105-58-8 108-20-3, Diisopropyl ether
108-29-2, γ-Valerolactone 108-32-7, Propylene carbonate
109-99-9, uses 110-71-4, 1,2-Dimethoxyethane
111-96-6 112-49-2, Triglyme 127-19-5, Dimethyl
acetamide 143-24-8, Tetraglyme 556-65-0, Lithium
thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl
carbonate 623-96-1, Dipropyl carbonate 629-14-1,
1,2-Diethoxyethane 2923-17-3 2923-20-8 4437-85-8, Butylene
carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane 7790-69-4,
Lithium nitrate 7791-03-9 13453-75-3, Lithium fluorosulfate
14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
tetrafluoroborate 14485-20-2, Lithium tetraphenylborate
15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium
hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate
29935-35-1, Lithium hexafluoroarsenate 30207-69-3,
-Methylpyrrolidinone 33454-82-9, Lithium triflate 35363-40-7,
Ethyl propyl carbonate 56525-42-9, Methyl propyl carbonate
90076-65-6 132404-42-3

RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)

(alkali metal battery having improved cathode activated with
nonaq. electrolyte having passivation inhibitor
 additive)

IT 57-52-3, Bis(triethyltin)sulfate 64-67-5, Diethyl sulfate
 77-78-1, Dimethyl sulfate 107-66-4 109-95-5, Ethyl nitrite
 540-80-7, tert-Butyl nitrite 541-42-4, Isopropyl nitrite
 542-56-3, Isobutyl nitrite 543-29-3, Isobutyl nitrate 543-67-9,
 Propyl nitrite 544-16-1, Butyl nitrite 598-02-7, Diethyl
 phosphate 598-05-0, Dipropyl sulfate 624-91-9, Methyl nitrite
 625-22-9, Dibutyl sulfate 627-13-4, Propyl nitrate 683-08-9,
 Diethyl methyl phosphonate 701-64-4, Mono-phenyl phosphate
 756-79-6, Dimethyl methyl phosphonate 762-04-9, Diethyl
 phosphonate 773-47-7, Dimethyl benzylphosphonate 812-00-0,
 Mono-methyl phosphate 813-78-5, Dimethyl phosphate 838-85-7,
 Diphenyl phosphate 868-85-9, Dimethyl phosphonate 884-90-2,
 Phosphoric acid, diethyl phenylmethyl ester 926-05-6, tert-Butyl
 nitrate 928-45-0, Butyl nitrate 935-05-7, Benzyl nitrite
 1469-70-1, Allyl ethyl carbonate 1610-33-9, Ethyl methyl
 phosphonate 1623-06-9, Mono-propyl phosphate 1623-07-0, Benzyl
 phosphate 1623-08-1, Dibenzyl phosphate 1623-14-9, Mono-ethyl
 phosphate 1623-15-0, Mono-butyl phosphate 1707-92-2, Tribenzyl
 phosphate 1712-64-7, Isopropyl nitrate 1804-93-9, Dipropyl
 phosphate 1809-19-4, Dibutyl phosphonate 1809-21-8, Dipropyl
 phosphonate 2104-20-3, Phenyl nitrate 2404-73-1, Dibutyl methyl
 phosphonate 2649-11-8, Didodecyl sulfate 3066-75-9, Phosphoric
 acid, diethyl 2-propenyl, ester 3459-92-5, Dibenzyl carbonate
 4074-56-0, Diphenyl sulfate 4427-92-3, 4-Phenyl-1,3-dioxolan-2-one
 4712-55-4, Diphenyl phosphonate 5944-45-6, Dicarboxylic acid, methyl
 2-propenyl ester 5944-47-8, Dicarboxylic acid, ethyl phenylmethyl
 ester 6410-56-6, Dipropyl methyl phosphonate 7526-26-3, Diphenyl
 methyl phosphonate 7664-38-2, Phosphoric acid, uses 7748-09-6,
 Diallyl phosphate 7757-79-1, Potassium nitrate, uses
 10124-37-5, Calcium nitrate 10377-60-3, Magnesium nitrate
 10497-05-9, Tris(trimethylsilyl)phosphate 13598-36-2, Phosphorous
 acid, uses 15022-08-9, Diallyl carbonate 15285-42-4, Benzyl
 nitrate 17176-77-1, Dibenzyl phosphonate 18306-29-1,
 Bis(trimethylsilyl)sulfate 18495-74-4, Dibenzyl sulfate
 19236-58-9, Dibenzyl methyl phosphonate 24424-99-5, Di-tert-butyl
 dicarbonate 27991-93-1, Sulfuric acid, Bis(4-nitrophenyl) ester,
 uses 28519-15-5, Phosphoric acid, dibutyl phenylmethyl ester
 31139-36-3, Dibenzyl dicarbonate 32636-65-0, Phosphoric acid,
 diphenylmethyl diethyl ester 34207-39-1, Nitrous acid, phenyl
 ester 54963-39-2, Phosphonic acid, (diphenylmethyl)-, dimethyl
 ester 57772-64-2 59577-32-1 66065-85-8, Succinimidyl-2,2,2-
 trichloroethyl carbonate 66085-82-3, Dicarboxylic acid, methylphenyl
 ester 66186-16-1, Didecyl sulfate 66735-55-5, Methyl Phenyl
 sulfate 72101-14-5; Phosphoric acid, Dimethyl methylphenyl ester
 74124-79-1 104184-81-8, Sulfuric acid, 2-chloroethyl ethyl ester
 115491-93-5, Diallyl dicarbonate 116977-36-7, Dicarboxylic acid,
 ethyl 2-propenyl ester 246140-06-7, Dicarboxylic acid, methyl
 phenylmethyl ester 246140-07-8, Dicarboxylic acid, phenylmethyl
 propyl ester 246140-10-3, Dicarboxylic acid, butyl phenylmethyl
 ester 246140-17-0, Dicarboxylic acid, mono-2-propenyl ester
 246140-18-1, Dicarboxylic acid, 2-propenyl propyl ester 246140-20-5,
 Dicarboxylic acid, mono-methyl ester 246140-22-7, Dicarboxylic acid,
 mono-ethyl ester 246140-24-9, Dicarboxylic acid, mono-propyl ester
 246140-26-1, Dicarboxylic acid, mono-butyl ester 246140-27-2,
 Dicarboxylic acid, cyanomethyl methyl ester 246140-29-4, Dicarboxylic
 acid, methyl nitromethyl ester 269402-58-6 269402-59-7
 269402-60-0

RL: MOA (Modifier or additive use); USES (Uses)
 (alkali metal battery having improved cathode activated with
nonaq. electrolyte having passivation inhibitor
 additive)

IT 534-16-7, Silver carbonate 563-63-3, Silver acetate 1314-62-1,
 Vanadium pentoxide, reactions 7440-22-4, Silver, reactions
 7761-88-8, Silver nitrate, reactions 7783-99-5, Silver nitrite
 20667-12-3, Silver oxide ag2o

RL: RCT (Reactant); RACT (Reactant or reagent)
 (alkali metal battery having improved cathode activated with
nonaq. electrolyte having passivation inhibitor
 additive)

IT 7440-37-1, Argon, uses 7440-59-7, Helium, uses 7727-37-9,
 Nitrogen, uses 7782-44-7, Oxygen, uses

RL: TEM (Technical or engineered material use); USES (Uses)
 (alkali metal battery having improved cathode activated with
nonaq. electrolyte having passivation inhibitor
 additive)

L115 ANSWER 21 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:277807 HCAPLUS

DOCUMENT NUMBER: 132:281684

TITLE: Organic carbonate additives for
nonaqueous electrolyte
 rechargeable cells

INVENTOR(S): Gan, Hong; Takeuchi, Esther S.

PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA

SOURCE: Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 996187	A1	20000426	EP 1999-308280	199910 20
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2000133306	A	20000512	JP 1999-299974	199910 21
PRIORITY APPLN. INFO.:			US 1998-105280P	P 199810 22
			US 1999-302773	A 199904 30

OTHER SOURCE(S): MARPAT 132:281684

AB A lithium ion electrochem. cell having high charge/discharge
 capacity, long cycle life and exhibiting a reduced first cycle
 irreversible capacity, is disclosed. The stated benefits are
 realized by the addition of at least one carbonate additive to an
 electrolyte comprising an alkali metal salt dissolved in a solvent
 mixture that includes ethylene carbonate, di-Me carbonate, ethylmethyl

carbonate and di-Et carbonate. The preferred additive is either a linear or cyclic carbonate containing covalent O-X and O-Y bonds on opposite sides of a carbonyl group wherein at least one of the O-X and the O-Y bonds has a dissociation energy less than about 80 kcal/mol.

IT 7790-69-4, Lithium nitrate 90076-65-6

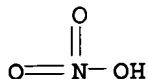
RL: DEV (Device component use); USES (Uses)

(organic carbonate additives for **nonaq.**

electrolyte rechargeable cells)

RN 7790-69-4 HCAPLUS

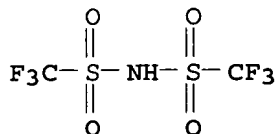
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Fluoropolymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(binder; organic carbonate additives for **nonaq.**

electrolyte rechargeable cells)

IT Secondary batteries

(lithium; organic carbonate additives for **nonaq.**

electrolyte rechargeable cells)

IT Battery electrolytes

(organic carbonate additives for **nonaq.**

electrolyte rechargeable cells)

IT Carbon black, uses

Carbon fibers, uses

Coke

RL: DEV (Device component use); USES (Uses)

(organic carbonate additives for **nonaq.**

electrolyte rechargeable cells)

IT 7440-44-0, Glassy carbon, uses

RL: DEV (Device component use); USES (Uses)

(glassy; organic carbonate additives for **nonaq.**

electrolyte rechargeable cells)

IT 105-58-8, Diethyl carbonate 556-65-0, Lithium thiocyanate

616-38-6, Dimethyl carbonate 623-53-0, Ethyl methylcarbonate
623-96-1, Dipropyl carbonate 2923-17-3 2923-20-8 7439-93-2,
Lithium, uses 7782-42-5, Graphite, uses 7790-69-4,
Lithium nitrate 7791-03-9, Lithium perchlorate 13453-75-3,
Lithium fluorosulfate 14024-11-4, Lithium tetrachloroaluminate
14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium
tetraphenylborate 15955-98-3, Lithium tetrachlorogallate
18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate
56525-42-9, Methyl propyl carbonate 90076-65-6
115028-88-1 132404-42-3

RL: DEV (Device component use); USES (Uses)
(organic carbonate additives for **nonaq.**
electrolyte rechargeable cells)

IT 1469-70-1, Allyl ethyl carbonate 3459-92-5, Dibenzyl carbonate
4427-92-3, 4-Phenyl-1,3-dioxolan-2-one 13139-17-8, Benzyl
succinimidyl carbonate 15022-08-9, Diallyl carbonate 17245-48-6
59577-32-1 62210-73-5 66065-85-8, Succinimidyl-2,2,2-
trichloroethyl carbonate 74124-79-1, Disuccinimidyl carbonate
82911-69-1, N-(9-Fluorenylmethoxycarbonyloxy)succinimide
88544-01-8

RL: MOA (Modifier or additive use); USES (Uses)
(organic carbonate additives for **nonaq.**
electrolyte rechargeable cells)

IT 11113-67-0, Iron lithium oxide 11126-15-1, Lithium vanadium oxide
12031-63-9, Lithium niobium oxide (LiNbO₃) 12680-08-9, Lithium
titanium sulfide 37296-91-6, Lithium molybdenum oxide
37367-96-7, Lithium molybdenum sulfide 39300-70-4, Lithiumnickel
oxide 39302-37-9, Lithium titanium oxide 39457-42-6, Lithium
manganese oxide 51177-06-1, Chromium lithium oxide 52627-24-4,
Cobalt lithium oxide 56321-19-8, Lithium niobium sulfide
61673-65-2, Lithium niobium selenide 61673-69-6, Lithium titanium
selenide 61673-70-9, Lithium titanium telluride 61673-71-0,
Lithium vanadium selenide 74245-06-0, Lithium vanadium sulfide
80341-49-7, Iron lithium sulfide 96352-80-6, Lithium molybdenum
selenide 96352-81-7, Lithium molybdenum telluride 103288-79-5,
Cobalt lithium sulfide 104708-77-2, Copper lithium oxide
148884-75-7, Cobalt lithium selenide 264142-74-7, Lithium vanadium
telluride 264142-75-8, Chromium lithium sulfide 264142-76-9,
Chromium lithium selenide 264142-77-0, Chromium lithium telluride
264142-78-1, Copper lithium sulfide 264142-79-2, Copper lithium
selenide 264142-80-5, Copper lithium telluride 264142-81-6,
Lithium niobium telluride 264142-82-7, Iron lithium selenide
264142-83-8, Iron lithium telluride 264142-84-9, Lithium nickel
sulfide 264142-85-0, Lithium nickel selenide 264142-86-1,
Lithium nickel telluride 264142-87-2, Cobalt lithium telluride
264142-88-3, Lithium manganese sulfide 264142-89-4, Lithium
manganese selenide 264142-90-7, Lithium manganese telluride

RL: TEM (Technical or engineered material use); USES (Uses)
(organic carbonate additives for **nonaq.**
electrolyte rechargeable cells)

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L115 ANSWER 22 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

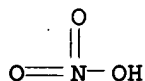
ACCESSION NUMBER: 2000:116840 HCAPLUS

DOCUMENT NUMBER: 132:154403

TITLE: **Nonaqueous organic**

electrolytes for low temperature
 discharge of rechargeable batteries
 INVENTOR(S): Gan, Hong; Takeuchi, Esther S.
 PATENT ASSIGNEE(S): Wilson Greatbatch Limited, USA
 SOURCE: Eur. Pat. Appl., 21 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

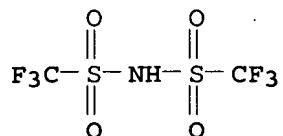
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 980108	A1	20000216	EP 1999-306388	19990813
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6153338	A	20001128	US 1998-133799	19980813
JP 2000067914	A	20000303	JP 1999-227691	19990811
PRIORITY APPLN. INFO.:			US 1998-133799	A 19980813
			US 1998-85532P	P 19980513
AB An alkali metal secondary electrochem. cell, and preferably a lithium ion cell, activated with a quaternary solvent system, is disclosed. The solvent system comprises a quaternary mixture of dialkyl carbonates and cyclic carbonates, and preferably di-Me carbonate, di-Et carbonate, ethylmethyl carbonate and ethylene carbonate. Lithium ion cells activated with this electrolyte have good room temperature cycling characteristics and excellent low temperature discharge behavior.				
IT 7790-69-4, Lithium nitrate 90076-65-6 RL: DEV (Device component use); USES (Uses) (nonaq. organic electrolytes for low temperature discharge of rechargeable batteries)				
RN 7790-69-4 HCAPLUS				
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)				



● Li

RN 90076-65-6 HCAPLUS
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,

lithium salt (9CI) (CA INDEX NAME)



● Li

- IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium battery **nonaq. org. electrolyte**
 IT Fluoropolymers, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (binder; **nonaq. organic electrolytes** for low temperature discharge of rechargeable batteries)
 IT Secondary batteries
 (lithium; **nonaq. organic electrolytes** for low temperature discharge of rechargeable batteries)
 IT Battery **electrolytes**
 (**nonaq. organic electrolytes** for low temperature discharge of rechargeable batteries)
 IT Alkali metals, uses
 Carbon black, uses
 Carbon fibers, uses
 Coke
 RL: DEV (Device component use); USES (Uses)
 (**nonaq. organic electrolytes** for low temperature discharge of rechargeable batteries)
 IT 24937-79-9, PvdF
 RL: TEM (Technical or engineered material use); USES (Uses)
 (binder; **nonaq. organic electrolytes** for low temperature discharge of rechargeable batteries)
 IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (glassy; **nonaq. organic electrolytes** for low temperature discharge of rechargeable batteries)
 IT 865-34-9, Lithium methoxide 12190-79-3, Cobalt lithium oxide colio2
 RL: CAT (Catalyst use); USES (Uses)
 (**nonaq. organic electrolytes** for low temperature discharge of rechargeable batteries)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate 2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 7790-69-4, Lithium nitrate 7791-03-9, Lithium perchlorate 11113-67-0, Iron lithium oxide 11126-15-1, Lithium vanadium oxide 12031-63-9, Lithium niobium oxide (LiNbO3) 12680-08-9, Lithium titanium sulfide 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate

29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate 37296-91-6, Lithium molybdenum oxide 37367-96-7, Lithium molybdenum sulfide 39300-70-4, Lithium nickel oxide 39302-37-9, Lithium titanium oxide 51177-06-1, Chromium lithium oxide 52627-24-4, Cobalt lithium oxide 56321-19-8, Lithium niobium sulfide 56525-42-9, Methyl propyl carbonate 61673-65-2, Lithium niobium selenide 61673-69-6, Lithium titanium selenide 61673-70-9, Lithium titanium telluride 61673-71-0, Lithium vanadium selenide 74245-06-0, Lithium vanadium sulfide 80341-49-7, Iron lithium sulfide 90076-65-6 96352-80-6, Lithium molybdenum selenide 96352-81-7, Lithium molybdenum telluride 103288-79-5, Cobalt lithium sulfide 104708-77-2, Copper lithium oxide 115028-88-1 132404-42-3 148884-75-7, Cobalt lithium selenide

RL: DEV (Device component use); USES (Uses)

(**nonaq.** organic electrolytes for low temperature discharge of rechargeable batteries)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6, Titanium, uses 12597-68-1, Stainless steel, uses

RL: MOA (Modifier or additive use); USES (Uses)

(powder, cathode containing; **nonaq.** organic electrolytes for low temperature discharge of rechargeable batteries)

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L115 ANSWER 23 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:34689 HCAPLUS

DOCUMENT NUMBER: 132:80952

TITLE: Inorganic and organic nitrate additives for **nonaqueous electrolyte** in alkali metal batteries

INVENTOR(S): Gan, Hong; Takuchi, Ester

PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA

SOURCE: Eur. Pat. Appl., 26 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 971432	A1	20000112	EP 1999-305473	19990709
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6060184	A	20000509	US 1998-112597	19980709
AU 9939108	A1	20000203	AU 1999-39108	19990708
JP 2000040523	A	20000208	JP 1999-195171	19990709

PRIORITY APPLN. INFO.: US 1998-112597 A

199807
09

OTHER SOURCE(S): MARPAT 132:80952

AB A nonaq. alkali metal, solid cathode battery capable of delivering high current pulses, rapidly recovering its open circuit voltage and having high current capacity has ≥ 1 nitrate additive to an electrolyte comprising an alkali metal salt dissolved in a mixture of a low viscosity solvent and a high permittivity solvent. A preferred solvent mixture includes propylene carbonate, dimethoxyethane, and an alkali metal nitrate, alkaline earth metal nitrate, and/or an organic alkyl nitrate additive.

IT 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane
111-96-6, Diglyme 112-49-2, Triglyme
143-24-8, Tetraglyme 90076-65-6

RL: DEV (Device component use); USES (Uses)
(inorg. and organic nitrate additives for nonaq.
electrolyte in alkali metal batteries)

RN 109-99-9 HCAPLUS

CN Furan, tetrahydro- (CA INDEX NAME)



RN 110-71-4 HCAPLUS

CN Ethane, 1,2-dimethoxy- (CA INDEX NAME)

 $\text{MeO}-\text{CH}_2-\text{CH}_2-\text{OMe}$

RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)

 $\text{MeO}-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{OMe}$

RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (CA INDEX NAME)

 $\text{MeO}-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{OMe}$

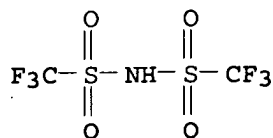
RN 143-24-8 HCAPLUS

CN 2,5,8,11,14-Pentaoxapentadecane (CA INDEX NAME)

 $\text{MeO}-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{OMe}$

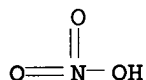
RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



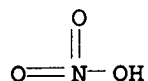
● Li

IT 7757-79-1, Potassium nitrate, uses 7790-69-4,
Lithium nitrate
RL: MOA (Modifier or additive use); USES (Uses)
(inorg. and organic nitrate additives for **nonaq.**
electrolyte in alkali metal batteries)
RN 7757-79-1. HCAPLUS
CN Nitric acid potassium salt (1:1) (CA INDEX NAME)



● K

RN 7790-69-4 HCAPLUS
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40
ICS H01M006-16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(binder; inorg. and organic nitrate additives for **nonaq.**
electrolyte in alkali metal batteries)
IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(conductive additive; inorg. and organic nitrate additives for
nonaq. electrolyte in alkali metal batteries)
IT Battery electrolytes
Primary batteries
(inorg. and organic nitrate additives for **nonaq.**
electrolyte in alkali metal batteries)
IT Esters, uses
Ethers, uses
RL: DEV (Device component use); USES (Uses)

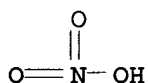
- (inorg. and organic nitrate additives for **nonaq.**
electrolyte in alkali metal batteries)
- IT Nitrates, uses
RL: MOA (Modifier or additive use); USES (Uses)
(inorg. and organic nitrate additives for **nonaq.**
electrolyte in alkali metal batteries)
- IT Alkali metal compounds
Alkaline earth compounds
RL: MOA (Modifier or additive use); USES (Uses)
(nitrates; inorg. and organic nitrate additives for **nonaq.**
electrolyte in alkali metal batteries)
- IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6,
Titanium, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
12597-68-1, Stainless steel, uses
RL: MOA (Modifier or additive use); USES (Uses)
(conductive additive; inorg. and organic nitrate additives for
nonaq. electrolyte in alkali metal batteries)
- IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,
uses 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 109-99-9, Thf, uses
110-71-4, 1,2-Dimethoxyethane 111-96-6, Diglyme
112-49-2, Triglyme 127-19-5, Dimethyl acetamide
143-24-8, Tetraglyme 556-65-0, Lithium thiocyanate
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane
872-50-4, uses 1313-13-9, Manganese dioxide, uses 1313-99-1,
Nickel oxide, uses 1344-70-3, Copper oxide 2923-17-3 2923-20-8
4437-85-8, Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane
7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate
11104-61-3, Cobalt oxide 11105-02-5, Silver vanadium oxide
11115-78-9, Copper sulfide 11126-12-8, Iron sulfide 12039-13-3,
Titanium disulfide 12068-85-8, Iron disulfide 12789-09-2, Copper
vanadium oxide 12798-95-7 13453-75-3, Lithium fluorosulfonate
14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
tetrafluoroborate 14485-20-2, Lithium tetraphenylborate
15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium
hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate
29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
triflate 35363-40-7, Ethyl propyl carbonate 51311-17-2, Carbon
fluoride 56525-42-9, Methyl propyl carbonate 90076-65-6
115028-88-1, Benzenesulfonic acid, pentafluoro-, lithium salt
132404-42-3 181183-66-4, Copper silver vanadium oxide
RL: DEV (Device component use); USES (Uses)
(inorg. and organic nitrate additives for **nonaq.**
electrolyte in alkali metal batteries)
- IT 543-29-3, IsoButyl nitrate 627-13-4, Propyl nitrate 926-05-6,
tert-Butyl nitrate 928-45-0, Butyl nitrate 1712-64-7, IsoPropyl
nitrate 2104-20-3, Phenyl nitrate 7631-99-4, Sodium nitrate,
uses 7757-79-1, Potassium nitrate, uses 7790-69-4
, Lithium nitrate 10124-37-5, Calcium nitrate 10377-60-3,
Magnesium nitrate 15285-42-4, Benzyl nitrate
RL: MOA (Modifier or additive use); USES (Uses)
(inorg. and organic nitrate additives for **nonaq.**
electrolyte in alkali metal batteries)
- REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L115 ANSWER 24 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:588065 HCAPLUS
DOCUMENT NUMBER: 131:202263
TITLE: **Nonaqueous electrolyte**
batteries with sulfonimide containing
electrolytes
INVENTOR(S): Kodama, Yasunobu; Ono, Hiroyuki; Sonozaki,
Tsutomu; Yoshida, Ichiro; Fujii, Takanori;
Nakane, Ikuo; Oikawa, Satoshi
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

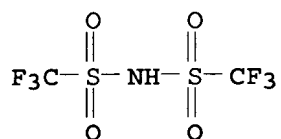
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11250932	A	19990917	JP 1998-46719	199802 27
PRIORITY APPLN. INFO.:				JP 1998-46719 199802 27

OTHER SOURCE(S): MARPAT 131:202263
AB The batteries use a **nonaq. electrolyte** solution
containing at least a sulfonimide $(C_xF_{2x+1}SO_2)(CyF_{2y+1}SO_2)NLi$, where x
and y are integers.
IT 7790-69-4, Lithium nitrate 90076-65-6
RL: DEV (Device component use); USES (Uses)
(**electrolyte** containing lithium sulfonimide salts for
secondary lithium batteries).
RN 7790-69-4 HCAPLUS
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 7790-69-4, Lithium nitrate 7791-03-9, Lithium perchlorate
 21324-40-3, Lithium hexafluorophosphate 90076-65-6
 132843-44-8 176719-70-3
 RL: DEV (Device component use); USES (Uses)
 (electrolyte containing lithium sulfonimide salts for
 secondary lithium batteries)

L115 ANSWER 25 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:72200 HCAPLUS

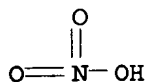
DOCUMENT NUMBER: 130:127499

TITLE: Secondary **nonaqueous**
electrolyte lithium batteries and
 manufacture of anode active material for them
 INVENTOR(S): Kakinuma, Akira; Koshihara, Nobuharu; Mori, Tatsuo
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11025977	A	19990129	JP 1997-179371	199707 04
PRIORITY APPLN. INFO.:			JP 1997-179371	199707 04

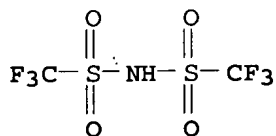
AB Secondary **nonaq. electrolyte** lithium batteries
 contain cathodes, anodes mainly containing LiFe5O8 as an active
 material, and **nonaq. electrolyte** solns.
 LiN(CF3SO2)2 may be used as the electrolyte. The anode active
 materials may be manufactured by mixing Fe oxide hydroxide with Li salts,
 preferably at a molar ratio of Fe:Li of 1:0.1-0.7, and firing the
 mixts., preferably at $\geq 450^\circ$. The batteries have good
 cycle characteristics.
 IT 7790-69-4, Lithium nitrate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in manufacture of LiFe5O8 anode active material for secondary
nonaq. electrolyte Li batteries with long cycle
 life)

RN 7790-69-4 HCAPLUS
 CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 90076-65-6, Lithium bis(trifluoromethylsulfonyl)imide
 RL: DEV (Device component use); USES (Uses)
 (manufacture of LiFe508 anode active material for secondary
 nonaq. electrolyte Li batteries with long cycle
 life)
 RN 90076-65-6 HCAPLUS
 CN Méthanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
 lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-58
 ICS H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST battery anode lithium iron oxide manuf; cycle life battery anode
 lithium oxide; nonaq electrolyte battery anode
 lithium oxide
 IT Secondary batteries
 (lithium; manufacture of LiFe508 anode active material for secondary
 nonaq. electrolyte Li batteries with long cycle
 life)
 IT Battery anodes
 Battery electrolytes
 (manufacture of LiFe508 anode active material for secondary
 nonaq. electrolyte Li batteries with long cycle
 life)
 IT 546-89-4, Lithium acetate 554-13-2, Lithium carbonate 1310-65-2,
 Lithium hydroxide 7790-69-4, Lithium nitrate 20344-49-4,
 Iron hydroxide oxide (Fe(OH)O)
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in manufacture of LiFe508 anode active material for secondary
 nonaq. electrolyte Li batteries with long cycle
 life)
 IT 90076-65-6, Lithium bis(trifluoromethylsulfonyl)imide
 RL: DEV (Device component use); USES (Uses)
 (manufacture of LiFe508 anode active material for secondary
 nonaq. electrolyte Li batteries with long cycle
 life)

life)
 IT 12023-70-0P, Iron lithium oxide (Fe5LiO8)
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP
 (Preparation); USES (Uses)
 (manufacture of LiFe5O8 anode active material for secondary
 nonaq. electrolyte Li batteries with long cycle
 life)

L115 ANSWER 26 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:550578 HCAPLUS

DOCUMENT NUMBER: 129:155746

TITLE: Double layer high power capacitor comprising a
 liquid organic electrolyte

INVENTOR(S): Penneau, Jean-Francois; Capitaine, Francois;
 Herlem, Guillaume

PATENT ASSIGNEE(S): Electricite De France (Service National), Fr.;
 Bollore Technologies

SOURCE: PCT Int. Appl., 27 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9835369	A1	19980813	WO 1998-FR211	19980205
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
FR 2759211	A1	19980807	FR 1997-1351	19970206
FR 2759211	B1	19990430		
AU 9862982	A	19980826	AU 1998-62982	19980205
EP 970496	A1	20000112	EP 1998-906976	19980205
EP 970496	B1	20040526		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
AT 268052	T	20040615	AT 1998-906976	19980205
US 6671166	B1	20031230	US 2000-367197	20000118
PRIORITY APPLN. INFO.:			FR 1997-1351	A 19970206

WO 1998-FR211

W

199802
05

AB The invention concerns a high power capacitor ideally polarizable consisting of a pos. electrode and its current collector, a neg. electrode and its current collector, said electrodes comprising a carbon containing material with high sp. surface area, a separator and a non-aqueous liquid electrolyte impregnating said separator and said electrodes. The invention is characterized in that the non-aqueous liquid electrolyte is an organic solution of a sodium or potassium or alkaline-earth metal salt, on their own or mixed in a solvent containing an acid.

IT 109-87-5, Dimethoxymethane 109-99-9, Thf, uses 110-71-4 646-06-0, Dioxolane 7757-79-1, Potassium nitrate, uses 73506-93-1, Diethoxyethane

RL: DEV (Device component use); USES (Uses)
(double layer high power capacitor comprising liquid organic electrolyte)

RN 109-87-5 HCAPLUS

CN Methane, dimethoxy- (CA INDEX NAME)



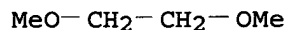
RN 109-99-9 HCAPLUS

CN Furan, tetrahydro- (CA INDEX NAME)



RN 110-71-4 HCAPLUS

CN Ethane, 1,2-dimethoxy- (CA INDEX NAME)



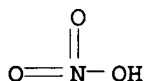
RN 646-06-0 HCAPLUS

CN 1,3-Dioxolane (CA INDEX NAME)



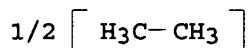
RN 7757-79-1 HCAPLUS

CN Nitric acid potassium salt (1:1) (CA INDEX NAME)



● K

RN 73506-93-1 HCAPLUS
 CN Ethane, diethoxy- (9CI) (CA INDEX NAME)



D1-O-Et

IC ICM H01G009-038
 ICS H01G009-058
 CC 76-10 (Electric Phenomena)
 IT 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 75-12-7,
 Formamide, uses 79-20-9, Methyl acetate 96-48-0,
 γ-Butyrolactone 105-58-8, Diethyl carbonate 107-31-3,
 Methyl formate 108-32-7, Propylene carbonate 109-87-5,
 Dimethoxymethane 109-94-4, Ethyl formate 109-99-9, Thf,
 uses 110-71-4 123-39-7, n-Methylformamide 127-19-5,
 n,n-Dimethylacetamide 141-78-6, Ethyl acetate, uses 333-20-0,
 Potassium thiocyanate 462-95-3, Diethoxymethane 540-72-7, Sodium
 thiocyanide 616-38-6, Dimethyl carbonate 646-06-0,
 Dioxolane 1187-58-2, n-Methylpropionamide 7440-09-7, Potassium,
 uses 7440-09-7D, Potassium, salts, uses 7440-23-5D, Sodium,
 salts, uses 7440-44-0, Carbon, uses 7447-40-7, Potassium
 chloride, uses 7487-88-9, Magnesium sulfate, uses 7601-89-0,
 Sodium perchlorate 7647-14-5, Sodium chloride, uses 7647-15-6,
 Sodium bromide, uses 7757-79-1, Potassium nitrate, uses
 7758-02-3, Potassium bromide, uses 7778-18-9, Calcium sulfate
 7778-74-7, Potassium perchlorate 7786-30-3, Magnesium chloride,
 uses 7789-23-3, Potassium fluoride 9010-79-1, Ethylene propylene
 copolymer 10034-81-8, Magnesium perchlorate 10043-52-4, Calcium
 chloride, uses 10124-37-5, Calcium nitrate 12005-86-6, Sodium
 hexafluoroarsenate 13477-36-6, Calcium perchlorate 13755-29-8,
 Sodium tetrafluoroborate 14075-53-7, Potassium tetrafluoroborate
 17029-22-0, Potassium hexafluoroarsenate 21324-39-0, Sodium
 hexafluorophosphate 25322-68-3 73506-93-1,
 Diethoxyethane

RL: DEV (Device component use); USES (Uses)

(double layer high power capacitor comprising liquid organic
 electrolyte)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L115 ANSWER 27 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1993:476374 HCAPLUS
 DOCUMENT NUMBER: 119:76374

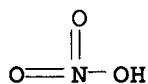
TITLE: **Nonaqueous-electrolyte**
lithium battery
INVENTOR(S): Ooshita, Ryuji; Yoshimura, Seiji; Takahashi,
Masatoshi; Watanabe, Hiroshi; Furukawa, Saneshiro
PATENT ASSIGNEE(S): Sanyo Electric Co, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 05082168	A	19930402	JP 1991-245932	199109 25
PRIORITY APPLN. INFO.:			JP 1991-245932	199109 25

AB The batteries use an electrolyte solution containing a cyclic compound having ≥ 2 ketone groups. Preferably, the compound is maleic anhydride, tetrahydrofuran-2,4-dione, or succinic anhydride; and the electrolyte is $\text{CF}_3\text{SO}_3\text{Li}$, LiPF_6 , LiBF_4 , LiAsF_6 , LiSbF_6 , and/or LiClO_4 . The use of the cyclic compds. improves the stability of the electrolyte solution

IT 7790-69-4, Lithium nitrate
RL: USES (Uses)
(corrosion inhibitor, electrolyte solns. containing cyclic diketones and, for lithium batteries)

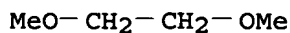
RN 7790-69-4 HCAPLUS
CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 110-71-4
RL: USES (Uses)
(electrolyte solvent, cyclic polyketones in, for lithium batteries)

RN 110-71-4 HCAPLUS
CN Ethane, 1,2-dimethoxy- (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 23
IT 7790-69-4, Lithium nitrate

RL: USES (Uses)

(corrosion inhibitor, electrolyte solns. containing cyclic diketones and, for lithium batteries)

IT 96-48-0, γ -Butyrolactone 110-71-4 616-38-6,
Dimethyl carbonate

RL: USES (Uses)

(electrolyte solvent, cyclic polyketones in, for lithium batteries)

L115 ANSWER 28 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1990:220375 HCAPLUS

DOCUMENT NUMBER: 112:220375

TITLE: Nonaqueous lithium alloy battery

INVENTOR(S): Furukawa, Nobuhiro; Yoshimura, Seiji; Takahashi, Masatoshi

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 48 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 349675	A2	19900110	EP 1988-119035	19881115
EP 349675	A3	19900509		
EP 349675	B1	19970416		
R: CH, DE, FR, GB, LI, NL, SE				
JP 02015566	A	19900119	JP 1988-165724	19880701
JP 06073303	B	19940914		
JP 02015567	A	19900119	JP 1988-165725	19880701
JP 07015821	B	19950222		
JP 02015568	A	19900119	JP 1988-165726	19880701
JP 2698103	B2	19980119		
CA 1308778	C	19921013	CA 1988-582548	19881108
US 5112704	A	19920512	US 1990-492267	19900228
CA 1317631	C2	19930511	CA 1992-616388	19920526
CA 1317632	C2	19930511	CA 1992-616389	19920526
CA 1317633	C2	19930511	CA 1992-616390	19920526
PRIORITY APPLN. INFO.:			JP 1988-165724	A

198807
01

JP 1988-165725

A

198807
01

JP 1988-165726

A

198807
01

US 1988-267591

B1

198811
07

CA 1988-582548

A3

198811
08

AB The battery includes an electrolyte of LiF_3CSO_3 and organic solvent mixture of ≥ 2 high b.p. solvents and including ≥ 1 cyclic carbonate. The solvent mixture comprises ethylene carbonate (EC), butylene carbonate, and DME; EC, γ -butyrolactone, and DME; or propylene carbonate, sulfolane, and THF. The battery cathode is selected from oxides, sulfides, and halides. LiF_3CSO_3 is heated, dried, and dehydrated in a vacuum at 80 - 150° . The electrolyte contains an inhibitor for inhibiting reaction between the battery can and the electrolyte. The inhibitor is selected from LiNO_3 , $(\text{EtO})_3\text{PO}$, $(n\text{-BuO})_3\text{PO}$, N,N,N',N' -tetramethyl ethylenediamine, etc.

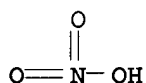
IT 7790-69-4, Lithium nitrate

RL: USES (Uses)

(corrosion inhibitors, **electrolyte** containing, for
nonaq. lithium alloy batteries)

RN 7790-69-4 HCAPLUS

CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 109-99-9, THF, uses and miscellaneous 110-71-4

RL: USES (Uses)

(electrolyte solvents containing, for lithium
trifluoromethanesulfonate, in lithium alloy batteries)

RN 109-99-9 HCAPLUS

CN Furan, tetrahydro- (CA INDEX NAME)



RN 110-71-4 HCAPLUS
CN Ethane, 1,2-dimethoxy- (CA INDEX NAME)

MeO-CH₂-CH₂-OMe

IC ICM H01M006-16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Batteries, primary
(button-type, lithium alloy, with **nonaq.**
electrolyte containing lithium trifluoromethanesulfonate and
cyclic carbonate)

IT 78-40-0, Triethyl phosphate 110-18-9 126-73-8, Phosphoric acid
tributyl ester, uses and miscellaneous 147-84-2, reactions
150-61-8 7790-69-4, Lithium nitrate 7803-65-8
127204-51-7

RL: USES (Uses)

(corrosion inhibitors, **electrolyte** containing, for
nonaq. lithium alloy batteries)

IT 96-48-0, γ -Butyrolactone 96-49-1, 1,3-Dioxolan-2-one
108-32-7, Propylene carbonate 109-99-9, THF, uses and
miscellaneous 110-71-4 126-33-0, Sulfolane 4437-85-8,
Butylene carbonate

RL: USES (Uses)

(**electrolyte** solvents containing, for lithium
trifluoromethanesulfonate, in lithium alloy batteries)

L115 ANSWER 29 OF 29 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1988:458111 HCAPLUS

DOCUMENT NUMBER: 109:58111

TITLE: Novel solute/solvent combinations for
rechargeable lithium cells

AUTHOR(S): Cadger, T. G.; Desjardins, C. D.; Laverdure, O.;
MacLean, G. K.; Sharifian, H.

CORPORATE SOURCE: Res. Prod. Counc., Fredericton, NB, E3B 5H1,
Can.

SOURCE: Proceedings - Electrochemical Society (1988),
88-6(Proc. Symp. Primary Second. Ambient Temp.
Lithium Batteries, 1987), 699-707
CODEN: PESODO; ISSN: 0161-6374

DOCUMENT TYPE: Journal

LANGUAGE: English

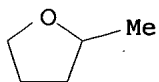
AB Studies of solubility, Li compatibility, and cond.were done on 22 Li
solute materials and 27 aprotic organic solvents, but no new simple and
effective 2-component system was identified. Li salts of weak acids
were soluble in the aprotic ether-type solvents, but yielded solns.
with poor ion conductivity The flooded half-cell cycling results on the
more promising solute/solvent combinations are given. The
LiAsF₆/2-methyltetrahydrofuran electrolyte remains the best for high
efficiency cycling of Li batteries at room temperature

IT 96-47-9, 2-Methyltetrahydrofuran 109-87-5,
Dimethoxymethane 109-99-9, uses and miscellaneous
111-96-6, Diglyme 112-49-2, Triglyme
123-91-1, 1,4-Dioxane, properties 142-68-7,
Tetrahydropyran 143-24-8, Tetraglyme 149-73-5,
Trimethoxymethane 646-06-0, 1,3-Dioxolane

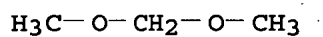
RL: USES (Uses)

(**electrolyte** solution in, properties of, for rechargeable
lithium batteries)

RN 96-47-9 HCAPLUS
CN Furan, tetrahydro-2-methyl- (CA INDEX NAME)



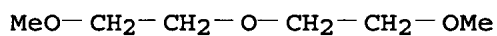
RN 109-87-5 HCAPLUS
CN Methane, dimethoxy- (CA INDEX NAME)



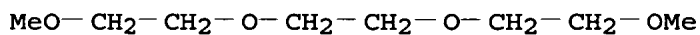
RN 109-99-9 HCAPLUS
CN Furan, tetrahydro- (CA INDEX NAME)



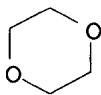
RN 111-96-6 HCAPLUS
CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



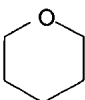
RN 112-49-2 HCAPLUS
CN 2,5,8,11-Tetraoxadodecane (CA INDEX NAME)



RN 123-91-1 HCAPLUS
CN 1,4-Dioxane (CA INDEX NAME)

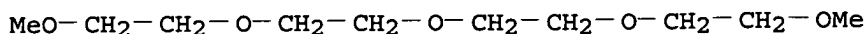


RN 142-68-7 HCAPLUS
CN 2H-Pyran, tetrahydro- (CA INDEX NAME)



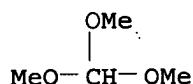
RN 143-24-8 HCAPLUS

CN 2,5,8,11,14-Pentaoxapentadecane (CA INDEX NAME)



RN 149-73-5 HCAPLUS

CN Methane, trimethoxy- (CA INDEX NAME)



RN 646-06-0 HCAPLUS

CN 1,3-Dioxolane (CA INDEX NAME)



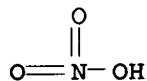
IT 7790-69-4, Lithium nitrate

RL: USES (Uses)

(electrolytes, in nonaq. solvents, properties of, for rechargeable lithium batteries)

RN 7790-69-4 HCAPLUS

CN Nitric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0,
 γ-Butyrolactone 108-29-2, γ-Valerolactone 108-32-7,
 Propylene carbonate 109-87-5, Dimethoxymethane
 109-99-9, uses and miscellaneous 111-96-6, Diglyme
 112-49-2, Triglyme 123-91-1, 1,4-Dioxane,
 properties 142-68-7, Tetrahydropyran 143-24-8,
 Tetraglyme 149-73-5, Trimethoxymethane 335-36-4,
 Perfluoro-2-butyltetrahydrofuran 374-33-4 497-26-7,
 2-Methyl-1,3-dioxolane 646-06-0, 1,3-Dioxolane 813-44-5
 822-83-3, 2-Isopropyl-1,3-dioxolane 1445-45-0,
 1,1,1-Trimethoxyethane 1469-73-4 1850-14-2,
 Tetramethylorthocarbonate 2344-09-4 2568-96-9,
 2-Ethyl-1,3-dioxolane 3741-38-6 13436-45-8 19354-27-9
 26093-63-0

RL: USES (Uses)

(electrolyte solution in, properties of, for rechargeable lithium batteries)

IT 2923-17-3, Lithium trifluoroacetate 7447-41-8, Lithium chloride,

uses and miscellaneous 7550-35-8, Lithium bromide (LiBr)
7790-69-4, Lithium nitrate 7791-03-9 10377-51-2, Lithium
iodide 13453-75-3, Lithium fluoro-sulfonate 14024-11-4, Lithium
tetrachloroaluminate 16903-41-6 17029-16-2 17347-95-4, Lithium
hexafluorosilicate 18424-17-4, Lithium hexafluoroantimonate
21324-40-3, Lithium hexafluorophosphate 25743-90-2 29935-35-1,
Lithium hexafluoroarsenate 33454-82-9, Lithium
trifluoromethanesulfonate 53607-97-9 65629-56-3 115028-87-0
115028-88-1 115516-44-4 115516-45-5

RL: USES (Uses)

(electrolytes, in nonaq. solvents, properties
of, for rechargeable lithium batteries)

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